MONTANA OUTDOORS
SEPT./OCT. 1975
SIXTY CENTS

GAME BIRD SCENES FOR FRAMING

MANAGING THE GRIZZLY

YELLOWSTONE ELK: CURSE OR BLESSING?

AN ALTERNATIVE TO DEVELOPMENT

MONTANA OUTDOORS

the official publication of the
Montana Department of Fish and Game
Sept./Oct. 1975, Vol. 6, No. 5

state of montana

Thomas L. Judge, governor

montana fish and game commission

Willis B. Jones, chairman

Arnold Rieder, vice-chairman
Arthur C. Hogenstan, member
Joseph J. Klabunde, member
Dr. W. Leslie Pengelly, member

montana department of fish and game

Wes Woodgerd, directar
Fletcher E. Newby, deputy director

environment and information division

Jomes A. Pasewitz, administratar

information bureau

Steve Bayless, chief

magazine staff

Bill Schneider, editor
Kay Ellerhoff, assaciate editar
Marty Beatty, circulatian directar
Donita Sextan, art directar
Vern Craig, artist
Tom Warren, photographer
Craig Sharpe, photogropher

the cover

To an ever increasing number af Montanans and out af staters, fall is synanymaus with hunting. We've pictured two of the hunter's favorite quarries, pheasant (frant caver) and elk (back caver). Bath phatas were taken by Jerry Manley af Butte. The pheasont cauld well serve as a preview af aur photo feature, "Game Bird Scenes far Framing," which begins an page 15. In it, we've collected the best phatos we cauld find of Montana's colarful and diverse game bird species. In this issue, we alsa explare the history and prablems assaciated with the Yellowstane elk herd; see LeRoy Ellig's article an page 26.

features

2 meet mr. whiskers: the catfish
be careful what you say about the edibility and general allure of this bewhiskered fish. you might be in for a surprise. by Ken Walcheck

8 montana deer: a history of change
you can't talk about "ups" and "downs" in deer numbers without mentioning a key factor—habitat. by Steve Bayless

15 game bird scenes for framing
some of the finest photos of montana's game birds by some of montana's finest photographers

26 yellowstone elk: curse or blessing?
the controversy about elk in and around yellowstone national park flared again this year. LeRoy Ellig examines the situation

35 managing the grizzly: department position statement
the real issues of habitat destructian and encroachment often take a back seat to discussions about hunting

38 elk in the missouri river breaks: department projects
one of montana's most picturesque areas once again is supporting a huntable elk population. by Bruce Campbell

42 the wolf
Dennis Flath explains the behavior and status of one of montana's rarest mammals

departments

1 director's column
11 catchall
14 contributors
31 dear F&G

Mantana Outdoors is published six times each year (January, March, May, July, September and November) by the Mantana Department of Fish and Game. Nancapyrighted articles in *Montana Outdaors* can be reprinted withaut permissian. Praper credit and a copy af the reprinted material will be appreciated. Cantributians (manuscripts ar illustratians) are welcame with the understanding that the department cannat be held responsible for loss ar damage. All contributions will be published at the discretian af the editar. Subscriptian rates are $3 far one year, $5.50 far twa years, $8 for three years and $2.50 far each additianal year. Multiple capies are available at newsstands and regional department offices. Price per capy is 60 cents. All carrespandence shauld be addressed: *Mantana Outdoors*, Department af Fish and Game, 125 Raberts; Helena, MT 59601.

POSTMASTER *Mantana Outdaars* is entered as secand class mail in Helena, MT 59601. Additianal entry in Butte, MT 59701.

ASHTON'S

a livable environment for WILDLIFE is a quality environment for MAN

HELPING THE LANDOWNER

Hunting season is just around the corner. Do you know where you're going to hunt this fall? I don't mean which numbered hunting district from the hunting map. I mean on whose land—federal, state or private?

Hunters who know where they are going and have made all the prior arrangements enjoy the greatest success ratio, by far. And this is particularly true if you're hunting on private land. In short, preparing for the upcoming hunting season means more than sighting in your rifle or making sure the fluorescent orange vest has another year left in it.

As a department, we are very aware of the "no-place-to-hunt" syndrome and are trying to do something about it. However, the sportsman must also accept part of the responsibility.

Our effort includes an active land acquisition program to provide game ranges and hunting opportunities, cooperative agreements going (or under study) with landowners or groups of landowners; we actively encourage—with magazine articles, TV and radio announcements and news releases—sportsmen to respect private property; we have urged hunters to report livestock rustling; we honor seven landowners each year for their outstanding achievements in erasing this conflict; we cooperate with the Montana Stockgrowers Association in distributing litter bags free to sportsmen.

Also, in the last few years, the department has joined agricultural interests in support of legislation and policies to regulate land use, energy development, water use, etc. Not surprisingly, activities like strip mining and rural subdivision negatively impact agriculture *and* wildlife habitat.

Specifically, I would like to mention two cooperative agreements in which the department is involved.

•In the Square Butte area of north central Montana, 125,000 acres of private land has remained open to hunting and fishing for four years because sportsmen honored the provisions of the agreement. Briefly, the landowners allow public recreation on their land *if* sportsmen leave their vehicles on designated roads and don't shoot around buildings or livestock. The department patrols the area to help enforce provisions of the agreement.

•Along the Blackfoot River in west central Montana, landowners have similarly banded together to allow public hunting. As at Square Butte, off-road vehicle use is taboo. Again, the department helps enforce the agreement.

We are, of course, limited in this activity by the amount of manpower we can put in the field and we are doing something about this, too. This fall we will have all available people out there in the "hot spots" doing whatever they can to assist hunters and landowners reach a better understanding.

Wes Woodgerd

Wes Woodgerd, Director
Department of Fish and Game

"Channel Catfish" painting by Bob Hines

MEET MR. WHISKERS

—the catfish—

by Ken Walcheck

IF you ask some folks about catfish, they'll describe a foul-tasting, bewhiskered bottom scavenger with needle-sharp stilettos and a grotesque shovel-shaped head. They also might mention that it inhabits sewer swills or stagnant, dirty water.

To others, "cats" and catfishing are as traditional as apple pie, corn on the cob and shooting firecrackers on the Fourth of July.

A catfisherman isn't the type who expounds on the virtues of split bamboo rods, silicone flotants, unweighted nymphs or electronic depth finders. He doesn't brag about far-off trout utopias or care about fancy fishing gear. He'd rather fish for cats in his favorite fishing hole with a setline or just a plain, old-fashioned rod and reel baited with his own special concoction guaranteed to catch a mess of cats.

This unique fish with its feline characteristics might not win any beauty contests, or even place first in a jumping match, but a catfish has many virtues of its own. In fact, some are pretty hard to beat.

In some midwestern and southern states, catfish are regarded highly—so highly, in fact, that one has to be careful to cast no aspersions on the edibility and general allure of Mr. Whiskers. One Missouri statesman put it square on the line during one of his "stumping" tours through the state. "The Missouri catfish," boomed the statesman to his constituents, "is as sacred to a Missourian as the hound dog!" The politician spoke not only for his home state but also for millions of other catfish admirers.

Catfish are well represented throughout the world. There are white catfish, blue catfish, spotted catfish, armor-plated catfish, electric catfish, parasitic catfish, walking catfish, talking catfish, blind catfish and just good old eating catfish.

Mr. Whiskers comes in a variety of sizes too. A giant species, sometimes 10 feet long and weighing 400 pounds, lives in the Amazon Basin and European rivers east of the Rhine. On the other side of the scale is a South American catfish so tiny it lives as a parasite in the gills of other fish.

Of the over 1,000 catfish species described by fish authorities, about 25 are native to the United States and vary in size from the inch-long least madtom to the giant blue catfish weighing over 100 pounds.

Montana has four species belonging to the Ictaluridae or fresh-water catfish family: the channel catfish, black and yellow bullheads and stonecat. Tail shape separates bullheads and stonecats from the channel catfish. The channel has a deeply forked caudal or tail fin, while its cousins possess emarginate or rounded tails. (For further identifying characteristics, see the insert on the Montana catfish family.)

UNIQUE FAMILY

This family possesses some unique characteristics. Catfishermen quickly learn about the sharp "iron" stilettos or fin spines. The sharp spiny ray at the leading edge of the two pectoral (breast) fins has a locking structure which enables the fish to hold it erect as a defense mechanism. In the stonecat, the needle point has a poison gland at its base. When the spine punctures flesh, a stinging toxin is injected which produces a burning sensation similar to a bee sting.

All members of the fresh-water catfish family are scaleless and possess long, droopy barbels or "whiskers" around their mouths. Specialized sensory cells which aid in orientation, schooling, breeding and tasting are concentrated on the barbels.

continued

All Montana catfish are omnivorous and eat almost any available living or dead organisms. Examination of stomach contents has revealed snails, small clams, frogs, mice, aquatic insects, fish, fish eggs, worms and aquatic plants of various species.

The channel catfish, *Ictalurus punctatus* (spotted fish cat), ranks as the gamiest member of the whiskered tribe. According to Dr. C. J. D. Brown, author of "Fishes of Montana," native distribution of the channel cat "extends from southern Canada to Mexico and from the Rocky Mountains to the Alleghenies and Florida." Widely introduced outside its native range, it's now found nearly everywhere in the United States and some call it the "all-American fish."

Channel catfish spawn in late spring or early summer when water temperatures exceed 75°F. Optimum spawning temperatures, according to most catfish authorities, center around 80°F. Spawning usually occurs in secluded, semidark nests built by the male—in holes, undercut banks, log jams, muskrat burrows or any dark cavity which offers a suitable spawning site. The average female lays from 3,000-8,000 eggs which are deposited in a gelatinous mass. The pugnacious male not only selects and clears the nest, but also drives the female out after fertilization and defends the eggs and fry. Hatching normally occurs in six to ten days, depending on water temperature.

In prime catfish waters such as the Missouri River below the dams at Great Falls and in the lower reaches of the Yellowstone River, channel cats average two or three pounds, with twelve to fourteen pounders common. The Montana record stands at 21 lbs. 5 oz. and was caught by Gary Eppers in 1964 in the Missouri River. The world rod and reel record cat weighed 58 pounds and was caught in South Carolina 11 years ago.

From New York to California, the channel cat rates high on catfish anglers' lists. When hooked, it bulldogs, rolls over the bottom and makes long, powerful runs. The cat's determined battle closely resembles the rolling, twisting, flexing battle of a lake trout.

CATFISH BAIT

Channel catfish have insatiable appetites and a whole book could be devoted to baits. In its own way, the mystique surrounding catfish baits is as diversified as the lore about artificial flies for trout.

Catfish bait can be divided into five general categories:

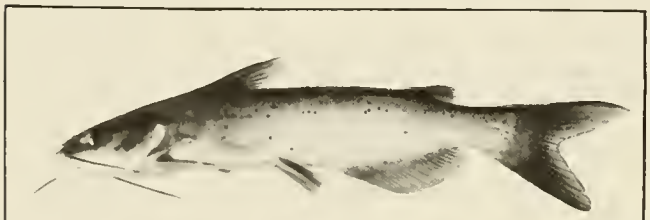
Live bait—crayfish, minnows, frogs, mice, salamanders, worms, fresh-water shrimp, small snakes and stonefly nymphs; in short, just about anything that happens to swim in catfish waters.

Cut bait—fish gills, carp, sucker and goldeye sides, shrimp, chubs and nearly any type of meat that can be cut into pieces.

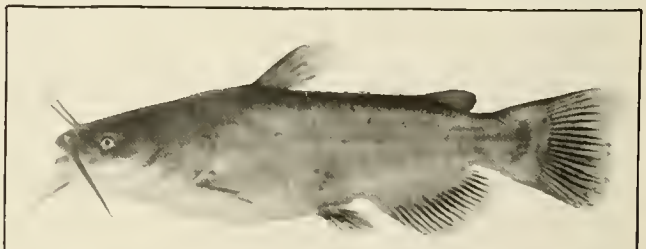
Soft bait—poultry and beef livers. The blood baits also fall in this group. Use a small treble hook with a spring coiled around the shank and smear it with thick chicken blood or beef melt. Some fishermen prefer to soak chunks of sponge or dough balls with parts of beef brains or chicken blood.

Stink bait—The so-called stink baits are rated tops by many catfish pros. Recipes for them are as treasured in catfish country as recipes for granddad's dandelion wine. Stink bait goodies include rotten minnows and carp entrails, soured venison, aged rabbit livers, congealed blood, rotted beef spleens and sponge chunks saturated with limburger or blue cheese.

What's the right degree of stink? Catfish buff Steve Bayless, chief of the department's information



Channel catfish—This species is the largest of the catfish in Montana. Found from southern Canada to Mexico and from the Rocky Mountains to the Alleghenies and Florida. Native to Montana and first reported by the Lewis and Clark Expedition of 1803-1806. This species has a deeply forked tail and scattered black spots along its side. Spotting disappears with age and old fish become inky black. Preferred habitat of the channel catfish is large rivers and lowland lakes. Spawning takes place in early summer in nests around logs, stones or undercut banks. Omnivorous in feeding habits. Not tolerant of pollution and requires well-oxygenated water. This species is caught on a variety of baits. Excellent food fish.



Black bullhead—Found from southern Canada to Mexico and from the Rocky Mountain states to the Alleghenies. Probably not native to Montana. This species has a nearly square tail and black fin membranes. The lower jaw barbels are grey to black and separate this species from the yellow bullhead with its yellow or white barbels. Frequents shallow, warm-water ponds, lakes and the back waters of streams. Extremely tolerant of pollution, turbidity and high temperatures. Omnivorous in feeding habits. Diet includes aquatic insects, crayfish, worms, snails, small clams, fish and plant material. Large adults most active at night. Maximum weight about two pounds. Montana specimens average ¼-½ pound. This bullhead considered excellent eating and readily caught on worms and scent baits.

bureau, suggests, "If the final concoction makes your eyes water, then you've got the right combination."

Other varieties—cheddar cheese cubes, kernel corn and wild grapes. Cubes of white laundry soap rank as a top choice in several states. Artificial lures such as spoons, jigs and plugs also take their share of cats.

So there you are, a choice of baits to tempt any catfish's palate.

SOPHISTICATED "NOSES"

Even psychologists are interested in the sophisticated odor detection apparatus of catfish. A psychologist at Trinity University in San Antonio, Tex., Dr. Vernon A. Benignus, is working with fresh-water catfish to differentiate their various neurological responses to odors.

Benignus tried numerous odor-producing materials with his catfish, including morpholine (which smells like dirty socks) and ethyl mercaptan (which smells like rotten eggs). He also found that salt-water shrimp really turned catfish on. But this raised a question: Why should catfish show such a strong attraction to organisms not found in their natural environment? Benignus' studies will hopefully reveal meaningful patterns of behavior as well as answering this question.

FISHING RIGS

Fishing rigs come in all sizes and varieties, from the barefoot boy's cane pole to setlines. Most bait fishermen prefer a short, heavy-duty bait casting rod and a level-wind, bait casting reel. Two terminal rigs are popular in Montana and elsewhere. Some anglers prefer to tie a small barrel swivel on the end of a 15- to 30-pound test line. A small snap swivel is then attached for easy changing of a #2 or smaller snelled hook. Next, a short six- to eight-pound test line is attached to the swivel and weighted with a sinker to keep the bait on the bottom.

Some prefer to rig up with a sliding sinker (oblong lead weight with a hole through the center), and a split-shot placed 10 inches above the hook to hold back the sliding weight. When a skittish cat picks up the bait, it pulls the line through the sinker without feeling much weight.

Channel catfish usually feed most actively early in the morning (dawn till about 10 a.m.) or late in the day (sundown to midnight). Fishing is generally better in early spring and late summer. Angling hot spots for the whiskered cat include deep holes and areas where the current rolls around brush, rock piles, boulders, bridge abutments or where it cuts under fallen trees and overhanging bushes. Channel cats like to hide all day in such cover, and if you place a lively bait in front of them, they'll probably grab it. With passage of H. B. 292 by the 1975 Montana Legislature, catfish are now considered a game fish in Montana, but no daily or possession limit exists.

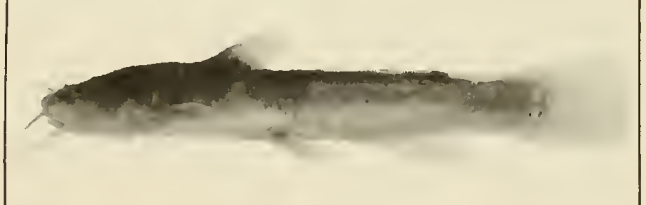
If you feel this brand of fishing is a little too tame, then you might consider a trip to Missouri or Arkansas during May or June and try a unique type of fishing called "grabbing" or "noodling,"—that is, daring to try for these barbed fishy felines with bare hands.

The grabbers operate during the breeding season when the males are guarding the eggs. The trick is to reach down in the murky water and try to entice a catfish to make a striking motion. The grabber then thrusts his arm through the fish's gills and out through its mouth, bringing up the thrashing channel cat on the crook of the arm.

Some grabbers use a different technique. As soon as the cat makes its defensive move, the grabber

continued

Yellow bullhead—Native distribution extends from the Great Lakes to the Gulf of Mexico and from eastern North Dakota to the Atlantic Coast. Not native to Montana. Extremely restricted in distribution in state and found in only a few localities. Construction of spawning sites and care of young similar to those of black bullhead. (One or both sexes build a nest varying from the usual shallow depression to a burrow up to two feet deep. Male guards eggs and jet-black young after hatching.) Omnivorous in feeding habits. Food ranges from crayfish and aquatic insects to snails and small fish. Considered more of a scavenger than black bullhead. Easily caught on various types of bait. Maximum size about 3 pounds, but averages less than 1 pound. Flesh is white, firm and has good flavor.



Stonecat—Found from Canada south to Alabama and west to the Continental Divide in Montana and Wyoming. Native to Montana. A small catfish, usually no more than 6-8 inches long. Can be separated from the other members of the Montana catfish family by its adipose fin, a keel-like fleshy ridge found on back of the caudal or tail fin. The stonecat's slender and flattened body is adapted for living under rocks in fast water. Summer spawning extends over a long period, possibly ending as late as August. Eggs deposited under stones or other submerged objects where there is a moderate current. Food of the stonecat is primarily aquatic insects and small fish. This species must be handled carefully because of the sharp pectoral spines which can inflict painful wounds. The flesh of this fish is excellent.

jams his index finger into the mouth and then forces his thumb down *hard* right in the center of the upper lip. If you hit the right spot, a facial nerve is inactivated and the fish becomes helpless.

Another method involves locating a catfish and slowly manipulating your hand upward until you can grasp the fish around its head. Many old-timers use this method and claim that the hand and finger movement "tickles" big cats into inaction.

Meeting one of these formidable leviathans whisker to whisker in a deep, coffee-colored catfish hole can be downright hair-raising. You have to be adventuresome, agile and muscular to try this sort of fishing, and a little experience doesn't hurt either. Beside the danger of having your flesh torn inside the cat's toothy mouth, there's always the danger of picking up an unwanted bonus—such as a snapping turtle.

Skinning a member of the catfish clan can be bothersome if you don't know the ropes. Here's how to skin a cat in seven easy steps:

(1)—Cut or snip off the pectoral and dorsal fins, including spines.

(2)—Cut through the skin all around the head, following the contour of the gill covers.

(3)—Cut down the center of the back until you reach the small, fleshy adipose fin on the back.

(4)—Holding the fish firmly by the head, pull the skin from the fish with a pair of pliers or vise grips. It should come off in two or three large pieces.

(5)—Make deep cuts on each side of the rear anal fin and remove.

(6)—Remove tail, head and entrails.

(7)—Fillet, steak or cut into pieces for freezing or cooking.

All over the country, people are catching on to something Southerners have known for a long time—that the catfish provides a real treat at the dinner table. Each gourmet has his own recipe, sometimes handed down through a family for generations. The time-honored method of preparing catfish is to dip the cutlets in a mixture of milk and eggs; roll in seasoned cornmeal, flour or cracker crumbs, and fry in deep fat. When they are golden brown and float to the top of the fat, they're done.

Or, you might like to try the following recipes from the National Marine Fisheries Service:

How to Flake Catfish

1½ pounds catfish fillets, fresh or frozen
1 quart boiling water
1 T salt

Boiled—Thaw frozen fillets. Place fillets in boiling salted water. Cover and return to the boiling point. Reduce heat and simmer for 10 minutes or until fish flakes easily when tested with a fork. Drain and flake.

Steamed—Thaw frozen fillets. Place fillets on a rack over boiling water; sprinkle with salt. Cover and steam for 10 minutes or until fish flakes easily when tested with a fork. Drain and flake.

This recipe will yield approximately 2 c flaked catfish to be used in recipes calling for flaked fish.

Sesame Catfish

2 pounds catfish steaks, fresh or frozen
1 c buttermilk
1 egg, beaten
1 c flour
1 T salt
1 T paprika
1/8 t pepper
1 c pecans, ground
¼ c sesame seed
½ c margarine, melted
¼ c pecan halves
lemon wedges
parsley sprigs

Thaw frozen fish. Combine egg with milk. Sift together flour, salt, paprika and pepper. Add to ground pecans and sesame seed. Add dry ingredients to milk; blend well. Place margarine in a shallow baking dish. Dip fish in batter and place in baking dish. Place pecan halves on top of fish.

Bake in 350° oven for 25-30 minutes or until fish is golden brown and flakes easily when tested with a fork. Garnish with lemon wedges and parsley sprigs. Serves 6.

Creamy Onion Catfish

2 pounds catfish steaks, fresh or frozen
1 t salt
¼ t pepper
1 8-oz. bottle green onion dressing
1½ c corn flake crumbs
1 T parsley, chopped
4 t Romano cheese, grated
½ t paprika
½ t salt
lemon wedges

Thaw frozen fish. Cut into serving-size portions. Season fish with 1 t salt and pepper. Combine crumbs, parsley, cheese, paprika and ½ t salt. Dip fish in dressing and roll in crumb mixture. Place fish in a well-greased shallow baking dish.

Bake in an extremely hot oven, 500°, for 15-20 minutes or until fish flakes easily when tested with a fork. Garnish with lemon wedges. Serves 6.

Catfish Gumbo

1½ pounds skinned catfish fillets, fresh or frozen
3 T melted margarine or cooking oil
1 c celery, sliced
1 clove garlic, minced
½ c green pepper, chopped
1 quart boiling water
2 chicken bouillon cubes
2 10-oz. packages frozen cut okra
1 bay leaf
1 16-oz. can tomatoes
¼ c catsup
1 6-oz. can tomato paste
1½ t salt
¼ t pepper
dash liquid hot pepper sauce
cooked rice

Thaw fillets if frozen. Cut into 1-inch pieces. Cook celery, garlic and green pepper in melted margarine or oil until tender. Dissolve bouillon cubes in water. Add bouillon, okra, bay leaf, tomatoes, catsup, tomato paste, salt, pepper and liquid hot pepper sauce. Cover and simmer for 30 minutes. Add fish. Cover and simmer for 15 minutes longer or until fish flakes easily when tested with a fork. Remove bay leaf. Place a small serving of rice in bottom of bowl. Fill with gumbo. Makes approximately 8-10 servings.

Catfish Creole

1 pound skinned catfish fillets, fresh or frozen
⅓ c margarine or cooking oil
⅓ c flour
½ c water
1 c celery, sliced

½ c green onions and tops, sliced
½ c green pepper, chopped
2 cloves garlic, finely minced
1 16-oz. can tomatoes, cut into small pieces
1 8-oz. can tomato sauce
1½ t salt
2 bay leaves
½ t thyme leaves
¼ t pepper
1 T brown sugar
1 T lemon juice
1 t Worcestershire sauce
¼ t liquid hot pepper sauce
¼ c parsley, chopped
cooked rice

Thaw fillets if frozen. Cut into 1-inch pieces. Cook flour in margarine until brown. Remove from heat and cool slightly. Add water gradually and stir until blended. Add remaining ingredients except catfish and rice. Cover and simmer for 20 minutes or until vegetables are tender. Remove bay leaves. Add catfish and simmer for 10 minutes longer or until fish flakes easily when tested with a fork. Serve over rice. Serves 6.

Catfish-Potato Scallop

6 skinned, pan-dressed catfish, fresh or frozen
2 t salt
½ t pepper
4 c thinly sliced cooked potatoes
1 10½-oz. can cream of celery soup
1 c dairy sour cream
1 T chives, chopped
2 T parsley, chopped
3 T pimiento, chopped
¼ c water
6 slices bacon
pimiento strips

Thaw fish if frozen. Clean, wash and dry fish. Season fish inside and out with 1½ t salt and ¼ t pepper. Combine soup, sour cream, chives, parsley, chopped pimiento, water and remaining ½ t salt and ¼ t pepper. Reserve ¾ c soup mixture for topping. Place alternate layers of potatoes and soup mixture in a well-greased shallow baking dish. Place fish on top of potatoes. Spread reserved soup mixture over fish. Place one slice of bacon on top of each fish. Bake in a 400° oven for 35-40 minutes until bacon is crisp and fish flakes easily when tested with a fork. Garnish with pimiento strips. Serves 6.

Catfish Parmesan

6 skinned, pan-dressed catfish, fresh or frozen
2 c dry bread crumbs
¾ c Parmesan cheese, grated
¼ c parsley, chopped
1 t paprika
½ t leaf oregano
½ t pepper
2 t salt
¼ t leaf basil
¾ c melted margarine or cooking oil
lemon wedges

Thaw fish if frozen. Clean, wash and dry fish. Combine bread crumbs, Parmesan cheese, parsley, paprika, oregano, basil, salt and pepper. Dip catfish in melted margarine and roll in crumb mixture. Arrange fish in a well-greased shallow baking dish. Bake in a 375° oven for 20-25 minutes or until fish flakes easily when tested with a fork. Garnish with lemon wedges. Serves 6.

Catfish Remoulade

3 c flaked catfish
⅔ c olive or salad oil
¼ c prepared mustard
3 T vinegar
1 t salt
¼ t liquid hot pepper sauce
2 T paprika
½ c onion, minced
½ c celery, minced
2 T green pepper, minced
1 t dehydrated parsley
1 hard cooked egg, finely minced
lettuce
lemon wedges

Combine oil, mustard, vinegar, salt, liquid hot pepper sauce and paprika. Beat until thick. Stir in onion, celery, green pepper, parsley and hard cooked egg. Fold in catfish. Chill for 1 hour. Line cocktail glasses with lettuce. Portion catfish mixture on lettuce. Garnish with lemon wedges. Serves 6.

Catfish Omelet

2 c flaked catfish
6 egg whites
6 egg yolks
½ c milk
2 T parsley, chopped
2 T onion, grated
3 T lemon juice
2 t salt
¼ t pepper
4 T melted margarine or cooking oil
1 10½-oz. can golden mushroom soup
¼ c water

Beat egg whites until stiff. Beat egg yolks until thick and lemon colored. Add milk, parsley, onion, lemon juice, salt and pepper; beat well. Add fish flakes; mix well. Fold into egg whites. Place margarine in a 10-inch frying pan; heat to moderate temperature. Pour omelet mixture into pan and spread evenly. Cook over low heat 3-5 minutes or until lightly browned on bottom. Bake in a 350° oven for 15-20 minutes or until knife inserted in the center comes out clean. Cut part way through center of omelet and fold in half. Combine soup and water; heat. Serve omelet immediately with mushroom sauce. Makes 6 servings.

A catfish dinner anywhere but at home used to be a rarity. If you craved one, you had to catch your own. Then about 1960, "down home" restaurant catfish dishes caught hold. In response to this appetite, a growing number of farmers flooded their acreage and began raising fish instead of conventional crops. Last year, southern catfish farmers sold over 80 million pounds, according to the Department of the Interior's Bureau of Commercial Fisheries. Major buyers include supermarkets and restaurants. While the prime sales have been in catfish country below the Mason-Dixon Line, demand in the North now exceeds the supply.

Because of the rising demand for channel catfish, fish farmers receive federal aid since pond-raised catfish are regarded as one answer to a rising U. S. demand for all types of fish products. The Soil Conservation Service, for example, offers free technical advice on construction of ponds for catfish farming.

The catfish country slogan, "three catfish in every skillet," certainly must be considered a worthy one in a protein-hungry world. Perhaps it will even replace the Depression promise of "a chicken in every pot."

There aren't many guarantees in life, but here's one that's ironclad: If you're lucky enough to catch a catfish and have it prepared by a good catfish chef, you too will become an ardent fan of Mr. Whiskers.

photo by Jerry Manley

by Steve Bayless

The history of deer and deer management in Montana is a history of change. Until the 1930s, deer were a scarce commodity in Montana. In fact, as one rancher said when describing the situation in northeastern Montana around 1920, "It was damn rare to even cut a track." During those days, Montana deer management consisted mainly of protecting deer, and restrictive seasons and bag limits were the rule.

Then, in the late 30s and early 40s, a variety of factors created favorable conditions for deer, and numbers began to build. During that period of time, the general land use picture in the state changed, particularly in eastern Montana. The Depression caused the demise of many small farms and ranches. This land reverted to brush and weeds, creating excellent deer habitat. World War II came along, and the shortage of ammunition and gas added to the reasons for deer increases.

The net result in the 40s was substantial numbers of deer practically everywhere. In fact, terms like "irruption" better describe deer increases during this period. Along with the increases, deer began to damage agricultural crops, and die from starvation in winter. The reason? Too many deer.

In an attempt to crop surplus deer and hold numbers in balance with their habitat, game biologists recommended more liberal hunting regulations. As a result, either-sex deer hunting gradually replaced bucks-only seasons between the late 40s and mid-50s. The length of season increased to 35 days or more, and bag limits increased to two deer in many areas.

The liberalized regulations increased the hunter harvest substantially. For example, the 1948 deer harvest amounted to 29,500 deer. Ten years later, in 1957, Montana hunters took 134,600 deer, an increase of 356% over the 10-year period.

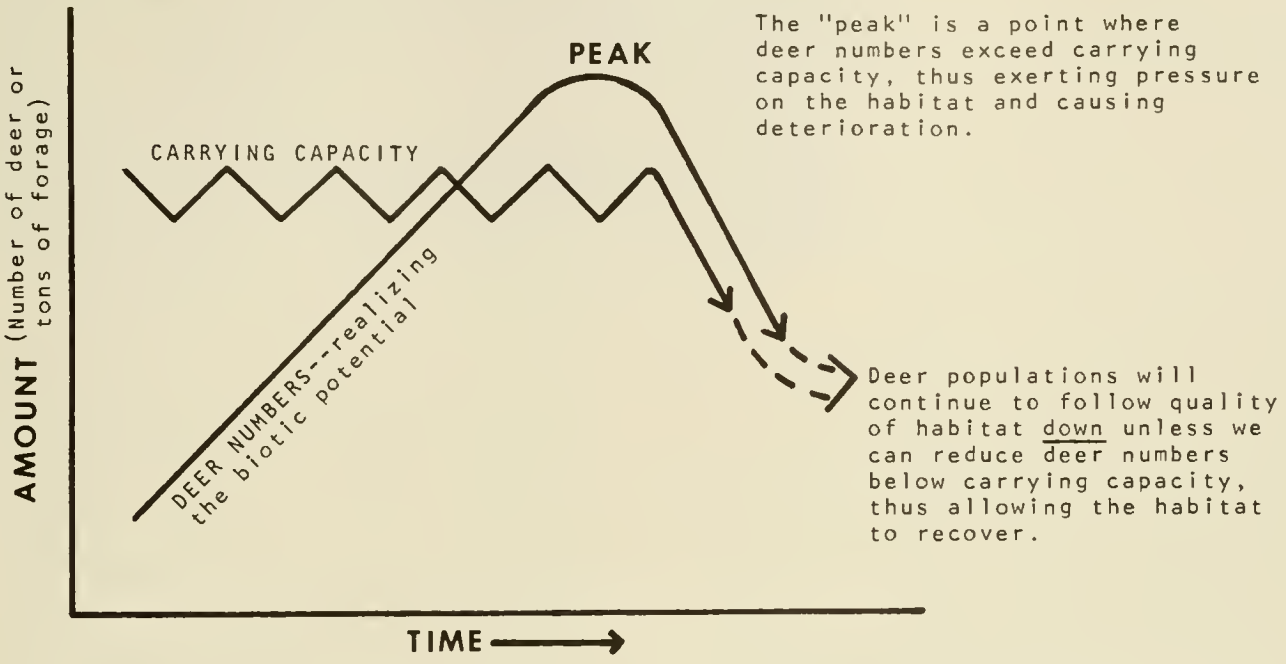
But in most cases, the liberal regulations of the 50s came too late, or they weren't liberal enough. Deer numbers had already increased to a "peak," and started downhill. (See graph.) Severe damage to deer ranges resulted because food supplies (plants) were overused. Too many deer for too long a period of time results in damage to deer habitat, and the overall ability of the habitat to support deer is reduced.

Another reason for downhill trends in deer numbers relates to plants and ecological succession, the orderly process of community change, or the sequence of plant communities which replaces one another in an area. This process of change occurs naturally, but it can be hastened by livestock grazing, herbicide application and other land uses. Some stages in the succession of plants on Montana deer ranges—i.e., from a shrub/weed range in the 40s to a range with few weeds and shrubs and lots of grass in the 70s—result in a lowered capacity of the range to support deer. There is a strong possibility that plant succession has or is eliminating some Montana deer ranges.

Even though "peaks" and plant succession have resulted in fewer deer in many areas of the state, deer populations remained at reasonably high levels through the 40s and 50s, and deer seasons were geared to harvest the resulting production. Since 1956, the statewide deer harvest has remained fairly stable—averaging over 110,000 deer annually. And seasons and bag limits have generally remained liberal. Yearly fluctuations in the harvest have occurred and will continue to do so in the future—due primarily to the influence of weather on fawning success, fawn survival, food supplies and hunting conditions.

An often-heard misconception about Montana deer concerns the importance of whitetails in the statewide harvest. Many people contend that the whitetail harvest has gradually increased each year, and whitetails now form a more important part of the harvest.

True, sportsmen harvest more whitetails now than in past years, probably because of increased nonresident whitetail permits in eastern Montana. But whitetails do not form a more important *part* of the harvest now than in the past. In 1945, 25% of the statewide harvest was whitetails, as compared to 29% in 1974. Since 1945, the percentage of whitetails


PEAK
The "peak" is a point where deer numbers exceed carrying capacity, thus exerting pressure on the habitat and causing deterioration.
CARRYING CAPACITY
AMOUNT (Number of deer or tons of forage)
DEER NUMBERS--realizing the biotic potential
Deer populations will continue to follow quality of habitat down unless we can reduce deer numbers below carrying capacity, thus allowing the habitat to recover.
TIME

This population/habitat diagram illustrates what happened to many Montana deer populations in the 1950s.

Deer numbers increased beyond the ability of the habitat to support them (to a "peak"). Damage to deer habitat resulted because there were too many deer for available food supplies and the overall ability of the habitat to support deer was reduced.

Where there is no cropping by man, or little hunter harvest, the deer population quickly fills its habitat. Competition between individuals for space, food or something else is keen. In such a population, we expect a small annual survival of young and most animals in the middle age categories (two to nine years).

In contrast, a population from which a large annual harvest of both sexes is taken has a different structure. The annual removal of a substantial proportion of the population reduces competition among individuals. This improves the chances of survival among the weaker members of the population. By removing a large annual crop, we take many animals in their prime, and thus reduce the number surviving to grow old. This throws a greater proportional advantage to the young. They survive well, mature rapidly and produce young. The structure of such a population will obviously be heavy to young animals.

Every habitat sets limits on the total deer population it can support, by its capability to provide food, shelter, space and the other essentials needed by deer for survival. Since reproduction adds many new individuals, we can help insure maximum reproductive potential if we keep the total population *below* the carrying capacity. (Carrying capacity is the number of individuals which can be supported—i.e., "carried"—on a given area for a significant period of time.)

On the diagram, the "peak" is actually above carrying capacity. When a population goes above the carrying capacity of its habitat and "peaks," the carrying capacity is reduced through habitat deterioration—overuse of the vegetation. This is why it's better to maintain a population at a point *before* the "peak" (at or almost at the carrying capacity) instead of *after*—when the range has already been depleted.

Management must hold deer numbers at or slightly *below* the carrying capacity, instead of allowing the deer herd to increase *above* the carrying capacity. If we *can't* do this, deer numbers *and* carrying capacity will decrease simultaneously. If we *can* do this, the habitat *and* the deer will remain healthy.

in the total harvest has remained fairly consistent—ranging from 17-29%.

The whitetail continues to provide an important part of the harvest. But its importance has remained fairly stable in regard to the total harvest. The mule deer is still the most sought-after big game species in the state—and the most important in terms of numbers killed. The whitetail could undoubtedly account for much more of the total harvest if Montana hunters would put forth the effort needed to successfully hunt this animal.

Remember this. In the past 20 years or so, Montana deer ranges have continued to annually produce a harvestable "crop" of deer, and this harvestable "crop" has remained fairly stable. A fundamental principle of game management holds that it's practically impossible to overharvest animals in good habitat—habitat which provides security, food and the other life-sustaining ingredients. This principle certainly holds true with Montana deer as indicated by the continued production year after year.

The historical sequence for Montana deer starts with the "good old days" when explorers, mountain men and pioneers assumed an inexhaustible supply of deer. Later settlement brought changes in deer habitat, and deer numbers decreased. Then, when favorable conditions occurred, deer increased.

continued

Through the late 40s, 50s, 60s and into the 70s, Montana deer populations have remained generally high, and Montana sportsmen have enjoyed good hunting. In fact, during the 25-year period from 1950 through 1974, hunters harvested about 2.5 million deer.

Now, in the mid-70s, Montana game biologists again face the need for restrictive season recommendations—not by choice, but rather by the demands created by people, plant succession, land use patterns and the necessity to do what's best for the wildlife resource.

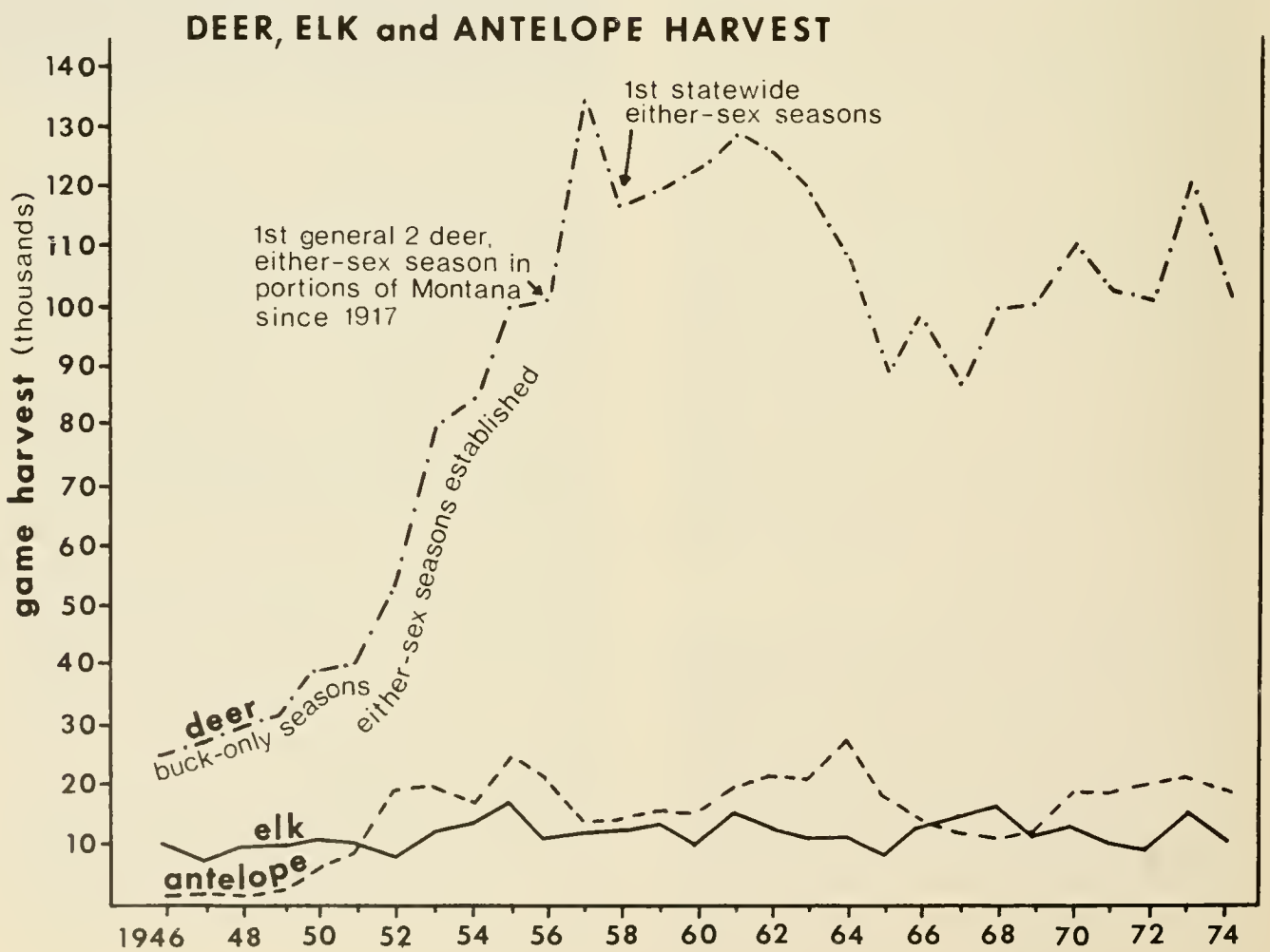
Montana has changed in the past few years—from a sparsely populated state with abundant natural resources and much wide-open space—to a state with resource exploitation under way at an accelerated pace. No longer can Montanans watch the world go by and feel fortunate to live here rather than someplace with many people, industry and the other things associated with an urban existence. *Now, it's happening here.*

In 1969, an estimated 128,177 deer hunters harvested an estimated 102,826 deer. In 1974, 197,838 deer hunters were afield, an increase of 35% in number of hunters. And they harvested an estimated 103,656 deer, an increase of only 0.8%. In other words, even though about the same number of deer were available for harvest, these deer had to be distributed among more hunters. This illustrates a major change in a short period of time.

And so it goes with Montana wildlife in general. Very little can be done with ecological plant succession which gradually changes a prime deer range into habitat which supports few deer, even though livestock overgrazing and other land uses may hasten this change.

But clearcut logging, strip mines and their associated power plants, more intensive agriculture, rural subdivisions and other land uses also take their toll of Montana's wildlife habitat—and wildlife suffers as a result. A deer herd dependent on the habitat in an area proposed for a subdivision, or a strip mine, or whatever, does not "move away." The herd simply declines or ceases to exist because its habitat declines or ceases to exist.

As a result, Montana sportsmen face more restrictive deer hunting seasons this year and probably through the 70s in order to distribute the available crop more equitably. And we all face a changed life style in Montana. Maybe we should take a long, hard look at where we're headed, and whether or not that's where we want to go. The rationing of poverty is not an appealing prospect for wildlife or sportsmen.



THE CATCHALL

An Alternative to Development

The 1975 Montana Legislature adopted H.B. 341 which allows and even encourages landowners to preserve natural areas and protect key wildlife areas. Under the new conservation easements, nesting, spawning and calving sites, winter range and migratory routes can be protected. And, conservation easements provide an alternative to development.

The concept of conservation easements has existed in eastern states as far back as 1900, gradually working its way west to the Great Lakes and then to the northwest, where it really seems to have caught on.

Montana led the way when legislators in 1975 amended the Open-Space Land Act of 1969 to permit voluntary conservation easements. Not to be outdone in environmental legislation, Oregon and Washington quickly followed suit. Essentially, conservation easements give landowners the right to restrict uses of their land and allow state agencies and private conservation trust organizations to acquire property rights to preserve that restricted land.

Most land already has some sort of easement—for roads, power lines, etc. These easements are permission given by the property owner to develop or change the land in some way. But under a *conservation* easement, the property owner voluntarily gives up his right or *anyone else's*—heir or future buyer—to develop or change the traditional use of the land. And the landowner chooses a conservation trust organization or state agency to enforce the easement. However, condemnation and eminent domain rights continue to have precedence.

The quick acceptance and enthusiasm for this land preservation concept is encouraging. Conservation easements can be more effective and permanent than zoning, and landowners seem to prefer them.

What makes the conservation easement particularly valuable for land protection is its almost infinite flexibility. Easements can be tailored to fit both the conditions of the land area and the needs of the owner. Nobody tells the landowner what he can do. Instead, the landowner decides (1) what uses he wants from his land such as range, hay and crop production and (2) what uses he is willing to forego, such as subdividing, clearcutting and strip mining. Then, the landowner works out a conservation easement agreement with a state agency or qualified conservation organization.

While officials of both The Nature Conservancy (NC), a land conservation organization headquartered in Virginia, and the federal Bureau of Outdoor Recreation (BOR) are enthusiastic about preserving and maintaining open land, they are quick to emphasize that to be really effective and successful, protection of river corridors or rangeland areas must be based on active local landowner involvement.

Just two weeks after Oregon passed its conservation easement bill in May 1975, the NC was asked to protect 23 acres from development, the beginning of an estuarine sanctuary program. And, in the San Juan Islands of Washington, the NC is trying to secure two-acre conservation easements around each of twenty-three nesting trees for protection of the northern bald eagle.

While programs utilizing conservation easements in more populous states have been quite successful, the fact that relatively large areas are held by few landowners in the northwest simplifies wide-scale land planning.

The Missouri Department of Conservation, working with the BOR, is soliciting conservation easements on land bordering a 105-mile section of the Meramec River outside St. Louis. The easements will restrict the land to agricultural use and they will be coupled with recreational easements to allow public access. Initially, efforts are focused on the 56 miles of the river nearest St. Louis. However, because eight municipalities, three counties and numerous private landowners are involved, one BOR official estimates it will take ten years to complete the project.

Montana landowners, with help from BOR and the NC, are working to preserve from development a fisherman's line-of-sight corridor along the Blackfoot River in western Montana, as well as developing public access sites for fishing. The NC is accepting and will enforce the easements while BOR provides the money—equal to the value of the rights donated by the landowner—to establish and provide for public access maintenance. Unlike the Meramac, this program could be completed within a year.

Conservation easements also cut wildlife habitat losses. The New York Times estimates that rural America loses 1.5 million acres of land a year to subdivisions, recreational land developments, strip mining and soil erosion. That 1.5 million acres annually directly reduces wildlife habitat. Land development pressure is typically heaviest in valleys with mild climate and fertile land—the same areas that

continued

recycled paper

provide prime winter range for wildlife.

Ken Margolis, northwest director of NC, said, "Winter range is the main problem for the survival of the great game herds in the northern Rockies." So critical is the need to maintain wildlife habitat that Margolis said the NC would look at any land which figures as a wintering area for wildlife, even though the NC prefers to accept only easements granted under an overall land planning program.

Overinflated land values have forced the sale of agricultural land to pay inheritance taxes. But by executing a conservation easement, landowners find they can preserve open space, insure the continuing traditional use by their heirs and receive a sizeable federal income tax deduction at the same time.

What is happening in Wyoming's Teton County strikingly illustrates the point.

Vince Lee, an architect in Wilson, Wyo. and coordinator for the NC's Jackson Hole Project, heads a program to preserve a giant elk winter range. Approximately 60,000-70,000 acres of the total 75,000-acre area are held in privately owned ranches.

Lee says a "not untypical 100-acre ranch" now sells for about $5,000 an acre. According to Margolis, agricultural land values there are unquestionably among the highest in the United States. Restricted to agricultural use by a permanent conservation easement, the land is reduced to a maximum value of $500 an acre, according to Lee. The $4,500-an-acre permanent loss in value becomes a contribution to a charitable organization—in this case to The Nature Conservancy—and gives the landowner an enormous federal income tax deduction of $450,000.

Of course, few 100-acre ranches produce enough income to take advantage of such a deduction, but in one stroke the landowner has devalued his property from $500,000 to $50,000, thus guaranteeing his children will not be forced to sell the property to pay federal estate taxes. Before deductions, the estate tax on $500,000 totals $145,700 compared to $7,000 for a $50,000 estate.

Without conservation easements, Lee says, "around here nobody can afford to die." However, neither the heirs nor any subsequent purchaser can ever violate the restrictions covered in the conservation easement. And should the heirs ever want to sell, they would be restricted to a price reflecting only agricultural values.

So far 1,500 acres in Teton County have been protected from development.

Since conservation easements restrict land use, property taxes are also limited. Virtually every study conducted on the subject suggests that land development for residential purposes doesn't produce tax *surpluses* but instead creates *deficits* for local government through increased service needs.

Under Montana law, land restricted by a conservation easement will remain uninfluenced by rising property tax classifications on surrounding land. However, unlike most other states with conservation easement bills, Montana does not provide a reduction in tax classification to reflect the reduction in land use. Assessed on the basis of surrounding developed areas, property taxes on woodland, river or shorelands continue at the rate for more highly developed land, despite guarantees that the land will remain undeveloped.

Unfortunately, this removes some of the incentive for landowners who already have had their land revalued to classifications higher than the agricultural rate. It can also result in a "race" between the tax assessor and landowners: Landowners try to grant easements before the tax assessor revalues the land, and the tax assessor hurries to revalue the land before the landowner puts it under conservation easements.

Margolis emphasizes that good land planning does not include that kind of pressure. Proponents of Montana's H.B. 341 are considering an amendment to make the bill conform to standard practice in other states.

Even with its problems, the new bill offers a great opportunity for the landowner to preserve natural areas and key wildlife range. It provides a viable, workable alternative to development, as well as preserving the land's traditional use.—*Gail McDowell*

SPRINGBOARD

"We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view."—*Aldo Leopold, "A Sand County Almanac"*

"Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves."—*John Muir*

FOR DISCUSSION

FIRST LIFETIME SUBSCRIPTION

We receive new subscriptions, renewals and our share of complaints in every day's mail, but we had a first recently: a request for a lifetime subscription.

The request came from Scotty Prescott of White Sulphur Springs and we were pleased to enter her name. Her letter ended with the note, "If Colstrip #3 and #4 are allowed, neither Montana nor Scotty will last that long."

recycled paper

Erskine Wins MWF Bicentennial Conservation Award

The highlights of Arch Erskine's 78 years as a conservationist are more than enough to warrant nominating him for the Montana Wildlife Federation's (MWF) Bicentennial Conservation Award.

Liz Smith, MWF awards chairman from Bozeman, said the new award was established because, "There is no reason to expect another person as well qualified for another 200 years."

Empathy without a trace of apathy best describes Arch's years of contribution to the movement now associated with "environmentalists." His lifelong objectives as a sportsman, an employe of the Northern Pacific Railway Co. and a concerned citizen set the stage for many improvements in game management, resource allocation and social justice.

The man with his pen and pad gave continuity, credibility and clout to action groups that became involved in the issues of concern to Arch. As the elected or acting secretary, Arch made his shorthand and typing skills available. The influence of any organization is about as strong as its secretary and Arch was among the best. In commenting on Arch's contributions to sound game management, Wes Woodgerd, director of the Department of Fish and Game, called him the "anchor man." It would also be correct to call him the motivation.

As roadmaster for Northern Pacific, Arch was forced to actions that conflicted with his humane and environmental feelings, but he always found a way to modify the acts as much as possible to favor wildlife. He pioneered keeping herbicides out of waterways when chemical weed control programs were dictated from above.

Boundless energy, knowledge, dedication, integrity, ability, amiability, dignity, credibility are all appropriate but inadequate to describe Arch—a giant among men and a darling to the ladies.

photo by Harley Hettick

Let's look at what his friends and co-workers had to say in nominating Arch for the award:

"No Montanan has contributed more than Archie in creating appreciation for what the outdoors has to offer. Furthermore, Archie has never shirked any task that needed doing."—G. M. Brandborg, retired forester

"Folks like Arch are the reason we're winning our fight to keep Montana Montana. Archie has the patience, persistence and commitment so necessary to sustain an unflinching attack against Montana's detractors."—Robin and Phil Tawney, Environmental Information Center

"Arch Erskine is that magic person who calls at unspecified times with important pass-along news of environmental issues. He always prefaces his important messages with, 'Hi, have you got a minute?' And even though sometimes we may be tempted to say 'No,' for Arch, the never ending crusader, we'll stand dripping from the shower to receive 'the word'."—Jean Warren, Sierra Club

"As one of the newer converts to the environmental battle, I want to acknowledge a debt to you. I hope simply that throughout our effort, we will have the same vigor and perseverance you've shown in your long efforts to preserve Montana's environment."—Rick Applegate, Center for Public Interest, Inc.

"Our members are deeply appreciative of his long hours of acting as liaison between many conservation and sportsmen's groups and the Congress and the State Legislature to effectively communicate the position of so many citizens. Archie, in assuming this responsibility, has singlehandedly kept our interests alive and effective; without it we would be nowhere."—Hugh Schaefer, president, Westslope Chapter, Trout Unlimited

"It is most appropriate to honor Arch Erskine at this meeting of the Montana Wildlife Federation (June 1975). He is the most steadfast legislative watchdog in Montana; he is the backbone of the public participation effort in western Montana." —Ed Dobson, Friends of the Earth

"The qualities of perception, tenacity and courage in resource affairs, the recognition of environmental truths, regardless of where the chips may fall—these are the trademark of a true conservationist. When one adds to these the warmth and dedication of responsible citizenship, one describes Arch Erskine."—Phil Schneider, National Wildlife Federation

"As a professional in the business of wildlife conservation and management, I am humbled at the skill and dedication of Arch. He is one of those rare individuals who is able to spank hands without offending the person, organization or agency. I consider him a cornerstone in the resource conservation movement

continued

•We regret to report that Arch Erskine passed away in Missoula on Aug. 11, 1975, after this article had gone to press. The MWF's award is a fitting tribute to his years of dedication to the conservation cause in Montana.—*Ed.*

recycled paper

of a state nationally known for its accomplishments in this area." —John Harris, wildlife extension agent

"On the home front, I know of no environmental concern which Archie does not call his own. He can truly wear with impunity the badge saying, 'A Constant Advocate'." —Doris and Kelsey Milner, Montana Wilderness Association

"Arch was a prime mover in the efforts of the Western Montana Fish and Game Association to get better laws on water pollution enacted in 1971."—Les Rusoff, past president, Western Montana Fish and Game Association

"I know that for the past quarter century it has been largely through your persistent efforts that the Western Montana Fish and Game Association has rated as one of the best conservation groups in the Montana Wildlife Federation. Remembering that wild habitat is a prime requisite of wildlife, you have never ceased to promote protection of the wild places."—Cliff Merritt, The Wilderness Society

"The environmental movement of the late '60s and '70s produced what was for the Department of Fish and Game a long, thin line of recruits to defend the resource. Whether long or short, Arch was always there, putting himself and his principles on the line for Montana's wildlife. Frequently he was the anchor man, and much of what we must battle for today and again tomorrow would not have been were it not for Arch." —Wes Woodgerd, director, Montana Department of Fish and Game

"In the past 20 years, I have never known Archie to become downhearted or waiver in his dedication to his work in wildlife and environmental conservation matters. Whatever else I could say would not do justice to the unselfish dedication demonstrated by this man."—Robert Sparks, president, Western Montana Fish and Game Association

"To the Montana Wildlife Federation, Arch is the man with the know-how, the ability and energy to do the job now, when it was needed, not next week when it might be more important. We are pleased to be one of the organizations expressing our appreciation and respect to a man who has given everything and expected nothing."—Don Aldrich, Montana Wildlife Federation

We have insufficient space to print the many testimonials presented to Arch along with his Bicentennial Conservation Award. However, one thing is certain: Although not particularly "tall" physically, when it comes to defending Montana wildlife, Arch casts a giant's shadow.

PROCEEDINGS AVAILABLE

The "Proceedings of the Fort Union Coal Field Symposium" conducted April 25-26 in Billings are now available.

Containing 75 papers on various aspects of the field and 770 pages, cost of the proceedings is $8.75 postage paid. Payment must accompany the order and checks should be written to "Coal Symposium." Order from Coal Symposium, c/o Bookstore, Eastern Montana College; Billings, MT 59101.

CONFERENCE PLANNED ON ALTERNATIVE AGRICULTURE

The Montana Alternative Agricultural Conference (MAAC) will explore the problems facing Montana's farmers, ranchers and those concerned with food production, land use and the quality of life in the state. Scheduled Oct. 16-18 in Billings, discussions and workshops will focus on three major topics: energy, organic methods and cooperative farming and marketing.

The conference was organized because it was felt that strip mining, land development, the growth of corporate agribusiness, environmental degradation, poor marketing conditions, low prices for farmers and high prices for consumers are problems requiring the combined efforts of a large cross section of Montanans.

If you are interested in additional information or possible participation, write MAAC, Route 4, Box 300; Laurel, MT 59044.

contributors

From scarce to surplus—Montana's deer populations have run the gamut. The department's information chief, Steve Bayless, traces their record in his article, "Montana Deer: A History of Change." Bayless began working for the department as an information assistant in Helena; he has also served as a game management biologist in Havre and regional information officer for the Glasgow area. He holds a B.S. in wildlife management from Utah State University, Logan, and a M.S. in game management from Montana State University, Bozeman. Turn to his article on page 8.

Conservation easements provide an alternative to development and Gail McDowell, a free-lance writer specializing in environmental subjects, tells you why. She and her husband, Joe, ranch near Ovando. Her article begins on page 11 of the Catchall section.

Discussions about elk in and around Yellowstone National Park are about as predictable as Old Faithful's eruptions. But, as author LeRoy Ellig points out, man understands why Old Faithful erupts, but the factors affecting elk are more difficult to explain. Ellig is the department's regional coordinator for the Bozeman area. Turn to his article, "Yellowstone Elk: Curse or Blessing?" on page 26.

If you hunted elk in the Missouri River Breaks last season, and spotted one with a brightly colored collar—your eyes weren't failing. It was one of Bruce Campbell's banded elk. And, it might have been carrying a radio transmitter to help him and other researchers track its movements. Campbell's article about the Breaks elk traces their history from the early 1800s—a period of plenty—to the 1850s when the herd died out completely. A closed chapter was reopened when the area was restocked in 1950-51. Campbell is a game management biologist for the department, headquartered in Glasgow. He holds B.S. and M.S. degrees in fish and wildlife management, both from MSU. His article begins on page 38.

The wolf has been feared, hated, bountied and generally considered a villain. Yet, wolves are probably the most affectionate and doting parents in the animal kingdom. The department's nongame species biologist, Dennis Flath, describes research into the wolf's behavior and discusses its status as one of Montana's rarest mammals. He holds a B.S. in biology from Pacific Lutheran University in Tacoma, Wash. and a M.S. in wildlife biology from the University of Montana, Missoula. His article begins on page 42.

recycled paper

GAME BIRD SCENES FOR FRAMING

In the Sept./Oct. 1974 issue, we ran a photo feature, "Big Game Scenes for Framing"—one full-page color picture of each Montana big game species. The article was very popular, so we're continuing it in this issue with "Game Bird Scenes for Framing." As with the big game selection, we've spent considerable time picking the best and most unusual photo we could find of each Montana game bird.

In future issues, we may continue this series with similar features on waterfowl, nongame wildlife and wildflowers.

We think these photos deserve framing. Hopefully, you'll agree.

The pictures appear in the following order: pheasants, Hungarian partridges, Franklin's grouse, blue grouse, ruffed grouse, chukar partridge, sharp-tailed grouse, sage grouse, Merriam's turkey and ptarmigan.

Photo credits:

Jon Cates
Route 2
Missoula, MT 59801
chukar partridge, Hungarian partridges, pheasants, Merriam's turkey

Danny On
728 Columbia Ave.
Whitefish, MT 59937
ptarmigan

Alan G. Nelson
36 Devonshire Townhouses
Great Falls, MT 59401
blue grouse, Franklin's grouse, ruffed grouse, sharp-tailed grouse

C. Robert Watts
1509 W. Washington
Lewistown, MT 59457
sage grouse

Yellowstone Elk:

CURSE OR BLESSING?

by LeRoy Ellig

Discussions about elk in and adjacent to Yellowstone National Park erupted again this year. Widespread concern about these animals is as predictable as Old Faithful's eruptions. Modern man has come to understand the factors that regulate Old Faithful, but the factors affecting elk seem to remain as mysterious as the geysers were to primitive man.

Explorers in the early 1800s consistently saw elk and other big game animals in the headwaters of the Yellowstone, Gallatin and Madison rivers. Still, it is commonly believed that big game animals did not *live* in the mountains, but were *driven* there after settlement of the plains in the mid-1800s. The belief that mountains are unnatural homes for big game has contributed its share of confusion about elk and their habitat in this region.

Elk and other big game animals were recognized as important assets when Yellowstone National Park was established in 1872. In this same era, buffalo were being slaughtered to bring the Plains Indian "under control." Man's plow began turning the native sod upside down. Domestic stock started to compete with wild animals. The domestic use and sale of big game meat for food was common. It must have been an almost automatic reaction to provide total protection to big game animals living in the park.

Hunting was banned, but the wolf, cougar and grizzly bear were considered threats to other animals and thus were subjected to predator control. Predator control was discontinued after early park years but not before the wolf was eliminated as an effective predator. Today, the cougar is rarely observed, and only the grizzly remains in significant numbers.

The impact of large predators and Indian hunting on Yellowstone elk populations is debatable. But we do know that in the early park years winter range vegetation was not suffering from the effects of prolonged overgrazing by elk. The wolf is a capable killer, and under severe winter conditions it may have significantly influenced elk population size. Indian hunters apparently had no hang-ups about bag limits, season dates or park boundary lines. Killing was opportunistic and wasteful when game was easy to get. Severe winter conditions in these early years could have set the stage for large kills by the area's two most efficient predators—wolf and Indian.

Shortly after establishment of Yellowstone, it became apparent that elk needed more than protection from man and four-legged predators. They also needed a year-round food supply. The park boundary in the Gallatin was located on Black Butte which provided little winter range inside the park. By 1896, an estimated 5,000 cattle grazed from early spring until snowfall on the area adjacent to the park. This unrestricted, heavy grazing by livestock must have consumed nearly all available forage before elk arrived on their ancestral winter range. Results were predictable. Elk reportedly starved.

In 1908, the FS discontinued livestock grazing on certain land adjacent to the park's boundary to provide winter forage for migrating elk. After a boundary expansion in the late 1920s, all of the Gallatin River herd's spring, summer and fall range fell inside park boundaries. But only a *small* portion of its winter range was within park lines. The FS continued to close additional lands to livestock grazing, so by 1935 no important elk winter range on *public* land was grazed by livestock at any time of the year. The Department of Fish and Game purchased private land in the 1940s and 1950s and set it aside for elk winter range.

Like the Gallatin herd, after the late 1920s expansion, the Yellowstone River herd had all its spring, summer and fall range within park boundaries. However, *unlike* the Gallatin herd, most of the available winter range ended up *within* the park.

Despite the attempts of the National Park Service (NPS), FS and the Department of Fish and Game to provide elk winter range, man's highway construction subdivisions, dude ranches, bars, trailer courts, motels, gas stations, etc. have usurped much ancestral elk winter range. Greatly intensified human activity during the winter multiplied the impact.

HUNTING

When Yellowstone was created in 1872, hunting continued along its border. Apparently, considerable illegal hunting occurred within the park in early years. From the park's creation to the present, hunting success depended

continued

photo by Bill McRae

on winter weather forcing elk out of summer and fall ranges onto winter ranges outside the sanctuary. For many years, hunting seasons were set only by traditional dates on the calendar. Obviously, winter doesn't arrive according to the calendar, so hunting success was a boom or bust operation.

One frequently hears of the "good old days," but the *bad* memories are soon forgotten. For example, hunter kills during an entire season were as low as 20 elk, and total harvests under 100 were common. On the other hand, sometimes hundreds of elk—and occasionally over 1,000—were killed in a single day. People seem to recollect these booms, but forget the busts.

Today, many people fail to realize how extremely important the Gallatin and Yellowstone Park boundary hunts were, because only limited elk hunting existed elsewhere in the state. Elk hunting opportunities broadened in the 1940s. Now, huntable elk populations exist in all mountainous areas of the state and in the prairie country along a portion of the Missouri River. Elk migrating out of Yellowstone Park have become a relatively small contribution to present statewide hunting success.

At first, hunting kills along the boundary were believed to be endangering and possibly eliminating elk in the Yellowstone and Gallatin drainages. However, it soon became evident to concerned observers that the greatest danger to the elk's welfare was elk. Elk did not control their own population size, so the population soon exceeded the food supply.

In the early 1900s, Theodore Roosevelt and other concerned citizens recognized that hunting along the park's boundaries was only partially effective in balancing the elk population with its available food supply. They also recognized the necessity to regulate the elk population *within* park boundaries to prevent habitat destruction. They didn't like the idea of elk existing on a recurring famine and starvation diet and wanted to prevent it. Unfortunately, this concern and advice was largely ignored. Rather than accept the fact that population control was a necessity, park boundaries were expanded.

But the ability of uncontrolled herbivore populations, such as elk, to destroy their environment became increasingly evident. By the mid-1930s, recommendations were being made to control the elk population within park boundaries at a level in balance with winter food supplies. Again, these recommendations recognized hunter kills on the boundary as only a partial solution, so additional recommendations to trap and transplant live elk, as well as kill elk within the park, were made. However effective control was not achieved and the elk population continued in a chronic state of famine and range depletion. Productivity of the grass winter range was greatly reduced and sagebrush, aspen and willow —all important food sources for elk—were on their way to oblivion by the 1950s.

OVERGRAZING

Elk are an end product of soil and the vegetation it produces. The grassland vegetation had been overgrazed until soil erosion occurred. The woody vegetation provided important elk food during severe winter conditions. Its loss through years of excessive grazing pressure made elk extremely vulnerable to winter food shortages. Destruction of streambank willows adversely affected fisheries and water quality. Without the willow protection, streambanks eroded rapidly and stream channels became wide and shallow, greatly reducing their fisheries potential.

In the 1960s, a vigorous attempt was made to correct the problem of chronic elk starvation and destruction of winter range vegetation by overgrazing. Hunting seasons on park boundaries were changed from fixed to flexible calendar dates that coincided with elk migration to park boundaries. Hunters were limited to avoid the concentration of literally thousands of people who once flocked to these hunting areas. Hunting was restricted to a few days each week so that elk would not be continually harassed. But hunting outside the park affected only the elk which moved across the boundary. It didn't reduce elk remaining on winter ranges inside the park.

Again, in the Yellowstone drainage, *most* available ancestral elk winter range lies *inside* the park. Elk movement across the borders depends on several factors—population size, severity of winter weather and food shortages. Although less winter range occurs inside park boundaries in the Gallatin, the same factors influence elk movement. Those elk which remained inside the park could only be controlled by the NPS.

Park rangers killed and live-trapped elk inside the park. (The meat went to Indian reservations and institutions.) This action, combined with hunting outside the park, reduced elk populations to a level which relieved the chronic starvation and provided an opportunity for winter range vegetation to begin a slow recovery from the adverse effects of prolonged overgrazing. These programs drew considerable public support, as well as vociferous criticism. Political pressure intensified and a Congressional hearing was conducted in 1968 to investigate park elk management. Much testimony supported the necessity of balancing the elk population with its winter range forage both to benefit the elk and also to preserve vegetation. Testimony also supported hunting seasons on elk which migrated out of the park. Great support was expressed for trapping elk inside the park and transporting them out of the park to be killed by sportsmen. But killing the same elk *inside* the park was taboo.

After the Congressional hearings, the NPS proclaimed a new policy of natural regulation for elk within the park. NPS also encouraged continuation of hunting

seasons on elk which left the park, but there would be no man-caused removal of elk within the sanctuary.

Suddenly, with the flick of a pen, we have disappeared into a Walt Disney fantasy without big, bad man, and everyone will supposedly live happily ever after. We have erased from our mind, like a bad memory, the consequences of overgrazing, soil loss, vegetation destruction, virtual elimination of certain shrubby and woody plant species, adverse effects on streams and fisheries, chronic famine for the elk population, periodic starvation losses of elk because of insufficient food to sustain them through the winter and adult cows so feeble from lack of food that the fetus is absorbed or newborn calves so weakened that they perish shortly after birth.

A century has demonstrated that elk populations on winter ranges *inside* the park cannot be regulated by hunting *outside* the park. Elk hunting on the boundary occurs only on a portion of the elk winter range. Winter snowfalls determine which parts of the winter range elk use. Elk usually begin to arrive on winter range in December. Elk migrating from the Gallatin herd to winter range on the Madison River frequently don't arrive until January or February. Yellowstone River elk didn't make extensive use of that portion of the winter range outside the park until late March and early April this year—when about 3,000 moved onto the wintering area.

Most of the Gallatin elk herd's winter ranges are far enough from the boundary so elk can be hunted successfully without the elk returning to the sanctuary. But the portion of the Gallatin winter range bisected by the park line does not provide an opportunity for effective herd regulation, because elk often simply move back into the park when harassed by hunters. The major portion of the Yellowstone herd's winter range lies inside the park and cannot be regulated by hunting outside.

Without action by the NPS, elk herds that winter on the boundaries can't be regulated to maintain a balance between elk numbers and winter forage. The NPS policy of natural regulation inside park borders can only produce one very predictable result—death by starvation.

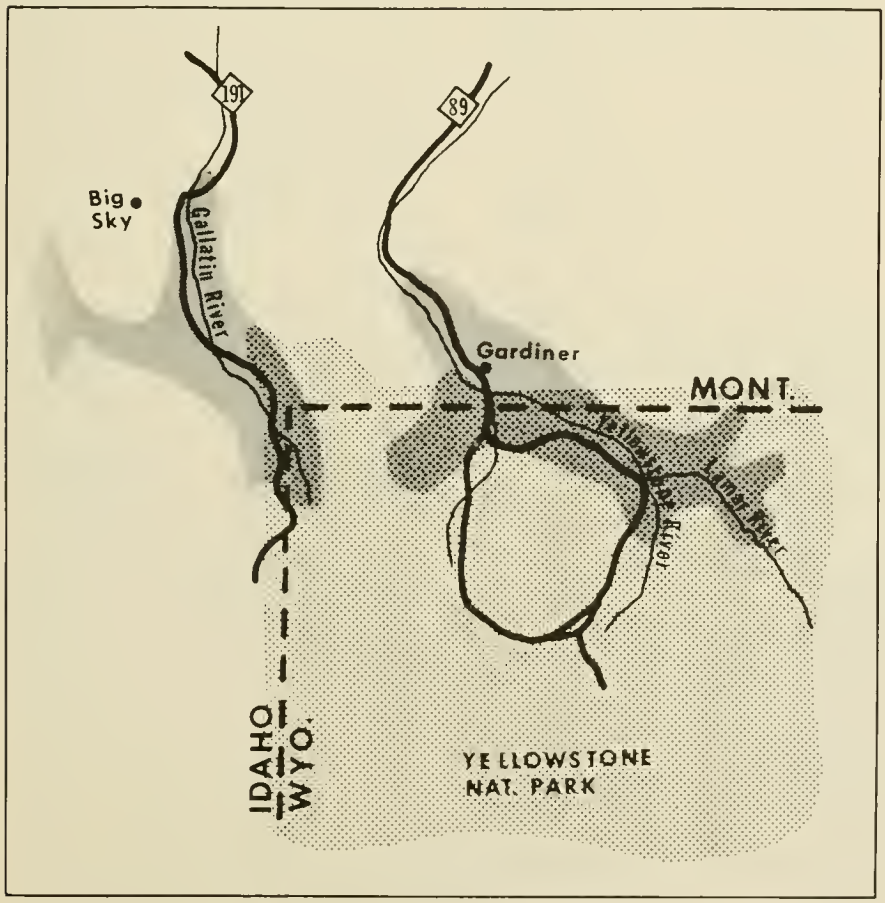
In 1974-75, Montana had a prolonged winter throughout the southwestern portion of the state, but the only elk herds suffering severe winter losses were those within and adjacent to Yellowstone Park. These losses were the direct result of excessive elk numbers trying to exist on an overgrazed winter range. Many elk died and all suffered the debilitating effects of prolonged famine.

The public was surprised and dismayed when elk began to starve. The Department of Fish and Game was castigated for mismanagement when elk began stumbling out of the park to die from starvation just outside its borders.

It was believed an emergency existed. So the elk were fed, since the department operates under a commission policy which states elk will be fed under emergency conditions.

Webster defines emergency as "an unforeseen combination of circumstances which calls for immediate action." The circumstances existing in and adjacent to the park as a result of natural regulation are hardly unforeseen. Instead, they are as predictable as taxes. These circumstances have existed since the park's creation, and are now worsened by the natural regulation policy. This results in the elk population suffering chronic famine, periodic large starvation losses of young and old animals, adult cows so weakened that newborn calves perish shortly after birth, adverse impacts on other animal species

continued



The dark areas represent elk winter range. Note that most of the elk winter range in the Gallatin [left] lies outside the park and most of the winter range for the northern Yellowstone herd lies within the park.

through food competition and habitat destruction, accelerated soil losses, destruction of vegetation from prolonged overgrazing the virtual elimination of certain shrubby and woody plant species, greatly accelerated streambank erosion, stream channels becoming wide and shallow and fish populations declining in affected streams.

Natural regulation professes great concern for elk and their habitat. When thousands of elk suffer chronic famine and hundreds die of starvation, natural regulation must be recognized for what it really is—a program which totally disregards the welfare of elk and their habitat.

Yellowstone Park elk *can be* a blessing to Montana hunters. But they will be a *curse* if hunting is blamed for causing the predictable starvation losses which are a result of natural regulation management. Considering the placement of the park boundary in relation to the available winter range, the lack of predators such as wolves, and human use and development in the area, this is hardly a natural situation. And natural regulation can't regulate an unnatural situation.

So what's the answer? What can be done to prevent starvation from happening periodically?

The park boundary could be adjusted. If all the elk wintered outside the park, hunting could control numbers. However, moving the park's boundary would spark considerable controversy, and most likely be unacceptable in the end.

The elk could be trapped and transplanted. But this is a very costly, ineffective operation that only transports the problem somewhere else. And all segments of the elk population aren't readily accessible for trapping and transplanting. Most Montana elk ranges already have about as many elk as the available forage can support. Moving more elk onto these ranges creates the same problems managers would try to alleviate in the Yellowstone.

The herds could be reduced directly *inside* the park. This is possible either by (1) allowing sportsmen to hunt inside the park or (2) having park rangers reduce the herds like they did in the 60s. Judging from reactions to similar proposals, however, neither of these plans would be palatable to the public. Direct reduction by hunters or rangers is probably the most *practicable* solution at this time, but it's also the most unpopular, even though hunters reduce elk numbers in a portion of Wyoming's Teton National Park and buffalo and big game animals are controlled on the National Bison Range in Montana.

Artificial feeding has been suggested as an alternative to regulating and controlling elk numbers within the capacity of natural food supplies to support them. Even if successful, such feeding programs would actually maintain the elk population at an ever increasing level which again would fail to recognize the eventual adverse consequences of too many elk for available food supplies. In addition, such programs are costly and they fail to alleviate overuse of natural foods. (See "Feeding Wintering Wildlife" in the Nov./Dec. 1973 *Montana Outdoors* Catchall section.)

The last alternative—*to do nothing*—is also feasible. This alternative would allow the natural regulation philosophy, with its associated and predictable consequences, to continue. The park and its problems with elk would then continue as an example for comparison with elk populations which *are* regulated by hunting. And the public could continue to expect the slow, agonizing starvation of elk that angered people this spring to occur again and again.

Sooner or later, natural regulation management must be reocgnized for what it really is—a system which results in slow, agonizing starvation and range deterioration. F&G photo by Tom Warren

dear F&G

Reichle Dam Proposal Revived

We've read newspaper articles pertaining to the possible revival of the long dormant Reichle Dam project on the Big Hole River.

Trout Unlimited was opposed to construction of this dam when it was last actively proposed in 1965, and we are equally opposed to it at this time. We are alarmed and dismayed that there are still those who would consider such an unnecessary destruction of ten miles of the best trout water in Montana.

This project should be viewed by the people of Montana for what it really is—another encroachment on state's rights by the federal government. A recent newspaper dispatch cited the intention of the Army Corps of Engineers to assume control over "every river, stream, lake or pond," in the United States.

Tom McNally, outdoor editor of the Chicago Tribune, in his article, "Rivers About to Die," (*Fly Fisherman*, April 1970) says: ". . .The arrogant, unshakeable, independent, irresponsible Corps of Engineers moves relentlessly on, constructing cement barriers that, for the most part, make unneeded lakes of irreplaceable rivers and streams. In the area of the Jefferson, Beaverhead and Big Hole rivers—one small corner of southwestern Montana—nearly 100 'possible' dam sites have been surveyed by the engineers."

The Director's Column in *Montana Outdoors* (May/June 1975) voices the concern of your department about a growing instability in already tenuous federal/state relations. We believe that the Montana Department of Fish and Game is committed, or should be committed, to the preservation of what remains of this state's "blue ribbon" trout water. We also believe that your department owes the sport fishermen of this area, as well as those of the rest of Montana, an immediate and forceful declaration of its unqualified opposition to the construction of Reichle Dam.

Trout Unlimited believes that as an agency whose sole purpose is to protect and perpetuate fish and wildlife in this state, you have no other alternative than to oppose a federal project that would interfere with your ability to carry out this program in the best interests of those who provide the financial support for the conduct of the department.—*George F. Grant, conservation chairman, Rocky Mountain River Rats; Butte, Mont. Chapter of Trout Unlimited*

•*The Fish and Game Commission recently rescinded all past actions concerning Reichle Dam. With this clean slate, the Commission can evaluate the proposal point by point, if a specific plan is formally presented.*—Ed.

NEEDS NUMBER ONE

I would very much like to find a copy of the first issue of your publication, Nov./Dec. 1970. Perhaps you would note my desire in the letters column of a future issue? I do appreciate your cooperation. —*George H. Tweney, 16660 Marine View Dr. S.W.; Seattle, Wash. 98166*

•*Since our supply of the first issue is completely exhausted, we hope a reader will be able to answer Mr. Tweney's request.*—Ed.

LEAD SHOT STAND CALLED "WISHY-WASHY"

It appears to me your stand on the lead shot issue was wishy-washy at best ("The Steel Shot Gamble," May/June 1975 *Montana Outdoors*). The ammunition industry has had the opportunity to develop an alternative shot since the 1950s, when Frank Bellrose first published on the problem of lead poisoning. Like most large industries, the ammunition companies will continue to resist change until forced by the government.

A 1973 study by J. C. Irwin, Department of Pathology, University of Guelph, Ontario and D. Dennis and N. G. Perret of the Canadian Wildlife Service, Department of the Environment, Ottawa, Ontario, had this to say: ". . .In a series of tests, measurements were made on the wear and damage to the barrels of shotguns from which one ounce loads of soft-iron, lead-iron (50 and 75% lead by volume) and copper shots were fired. Three hundred rounds of the two types of lead-iron shots and the copper shots did not cause measurable damage, whereas soft-iron caused obvious ring bulging to 0.0045 inches at the location of the choke.

"The greater density of the lead-iron shot containing 50% lead (9.7 g/ml, actual density) indicates that it will be more efficient for hunting waterfowl, in terms of the ratio of bagged to crippled birds, than either soft-iron (7.86 g/ml, theoretical density) or copper shot (8.96 g/ml, theoretical density).

"Lead-iron shots can be produced commercially in the quantities required at a cost competitive with soft-iron shots."

In view of the forthcoming controversy over hunting in the United States, the hunters had better jump at this chance to show the nation they are aware of this problem and are acting upon it.—*Virginia A. Terpening, wildlife biologist, Cooperative Wildlife Research Laboratory, Southern Illinois University; Carbondale, Ill.*

POOR SUBSTITUTE FOR NATURE

As a native of northern Wyoming currently in the military, I am very interested in the present and future conservation problems of the Montana-Wyoming area. Your publication is most informative and I virtually pore over every issue.

I am a parachutist and during a recent jump I had the opportunity to view the Muhlenberg County, Ken. area from approximately 8,000 feet. I was appalled. Strip mining activities left massive gouges in the hills and valleys of an otherwise beautiful area. The sculptor of these ugly scars, a gigantic power shovel, is actually publicized on local post cards as a tourist attraction.

Is this the fate that will befall areas like Decker, Mont.? Having hunted and fished the lands and waters between Sheridan, Wyo. and Decker many times, I realize that they are not the most scenic or beautiful parts of either state. They are, however, important and delicate wildlife habitats and certainly worth saving for sportsmen and future generations.

Unfortunately, it is too late to reclaim the land destroyed in Muhlenberg County. Reclamation at its best is a poor substitute for nature. Why should reclamation be necessary in the first place?

People of Montana, you have a chance. Use it wisely.—*Michael L. Spracklen; Hopkinsville, Ken.*

MONTANA IMAGERY

I really enjoyed your March/April 1975 issue of *Montana Outdoors*. The very name "Montana" brings to mind images of trout, big game hunting and splendid scenery. This issue with its excellent photographs shows that our eastern end of Montana has not been short changed.

Also, the articles concerning energy demands and development in eastern Montana are most timely. I appreciate your willingness to speak out on any subject which poses a threat to your responsibility—wildlife and its habitat.

Montana Outdoors could so easily have been "just another fish and pheasant magazine," but it is obvious that Montana's Department of Fish and Game takes its motto seriously.

Yours is a quality publication; keep up the good work.—*Mrs. Art Hayes, Jr.; Birney, Mont.*

recycled paper

WHAT ABOUT THIS ANTI-HUNTING THING?

by John Madson

Anti-hunting is a hard thing to weigh and measure. Is it really significant, or is it one of those phantoms that exists more in the hunter's imagination than in the mind of the public? I sometimes wonder—it seems that all Alice Herrington of Friends of Animals has to do is clear her throat and ten million of us go right up the wall.

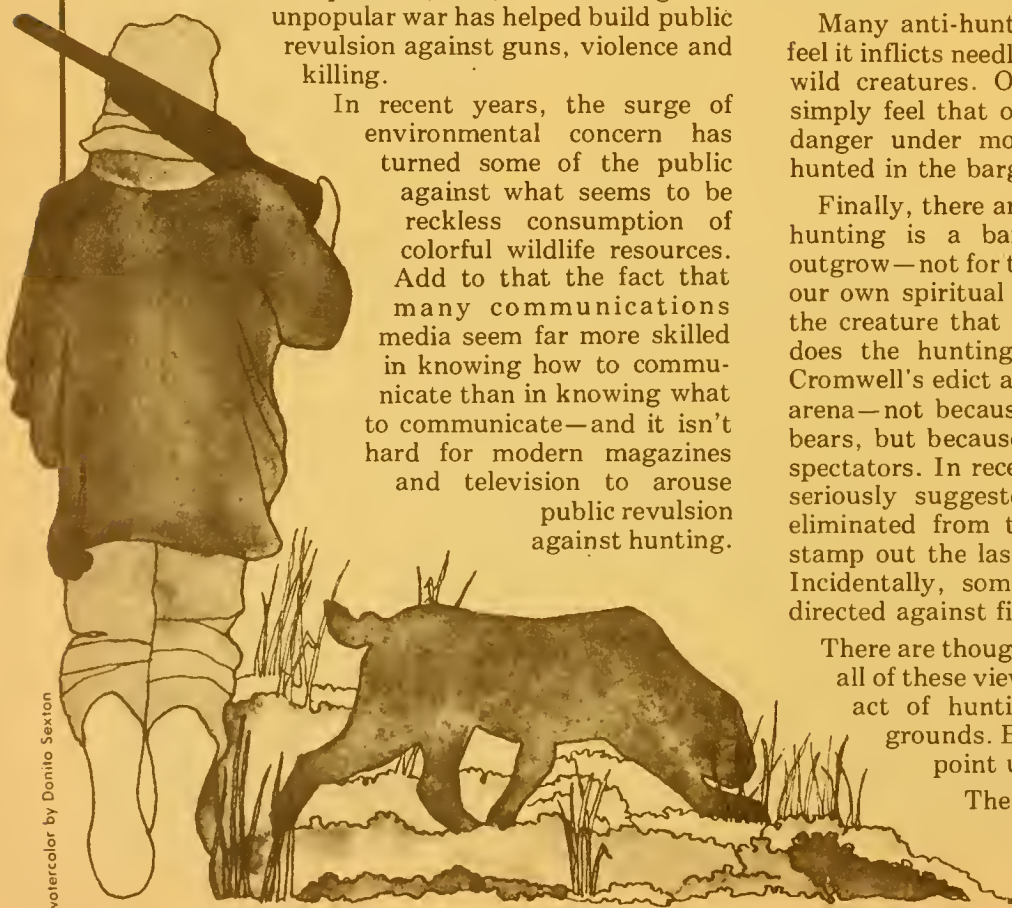
But although our responses to our critics are often blown out of proportion, there's little real doubt that anti-hunting is a growing force, and something that hunters must watch closely and try to understand.

For as long as I can remember, there have been anti-hunters. It's nothing new. But for a long time it was a shapeless attitude, unorganized and undirected. It seemed to take on a new dimension not long after World War II, and especially in the past 15 years. There are several basic reasons for that:

For one thing, our growing population has become largely urban and suburban, losing its rural roots and forsaking the old rural arts—of which hunting is a prime example.

It's possible, too, that a long and unpopular war has helped build public revulsion against guns, violence and killing.

In recent years, the surge of environmental concern has turned some of the public against what seems to be reckless consumption of colorful wildlife resources. Add to that the fact that many communications media seem far more skilled in knowing how to communicate than in knowing what to communicate—and it isn't hard for modern magazines and television to arouse public revulsion against hunting.



watercolor by Donito Sexton

We've heard it said that there is relatively no more anti-hunting than there ever has been—that the number of anti-hunters is larger because the population is larger, but that the proportion is about the same. I don't believe that; we can be sure that anti-hunting sentiment has increased, that it is far more effective than it has ever been, and that it makes good sense to large segments of the public.

On the personal level, there are several basic reasons for anti-hunting sentiment.

Joseph Wood Krutch felt that hunting was "the pure form of evil" which metaphysicians had long sought. Professor Krutch had no brief against killing for actual need. But killing for pleasure, or as part of a pleasurable pursuit, he felt, was reprehensible.

Dr. Albert Schweitzer felt that sport hunting demonstrated a total lack of "reverence for life." And as a theologian, scientist and humanitarian, he felt that reverence for life was one of the highest conditions to which man can aspire. He once said that modern man is truly ethical only when he refrains from needlessly taking life.

Many anti-hunters oppose hunting because they feel it inflicts needless pain and suffering on innocent wild creatures. Others are more pragmatic; they simply feel that our wildlife resources face enough danger under modern technology, without being hunted in the bargain.

Finally, there are those anti-hunters who feel that hunting is a barbaric pastime that we should outgrow—not for the welfare of wildlife itself, but for our own spiritual welfare. Their concern is less for the creature that is hunted, than for the man who does the hunting. That is reminiscent of Oliver Cromwell's edict against bear-baiting in the English arena—not because of any pain that it caused the bears, but because of the pleasure that it gave the spectators. In recent times in England, it has been seriously suggested that red deer be completely eliminated from the British Isles in an effort to stamp out the last of the big game hunting there. Incidentally, some of this same feeling has been directed against fishing.

There are thoughtful hunters who can see flaws in all of these viewpoints, and who can defend their act of hunting on ethical and philosophical grounds. But, as I said earlier, that's not the point under discussion.

The maddening part of all this is the fact that opposition to all hunting usually stems from critics for

recycled paper

whom we have no real respect—critics who not only lack credentials, but who are themselves open to moral judgment.

Dr. C. H. D. Clarke, the eminent Canadian biologist, once wrote: "If one reasonable man speaks out against us, we owe it to ourselves to seek the truth. But the voices that have been raised against us have been charged with emotion, coming, not as they pretend, from philosophical heights, but from tight compartments insulated from reality. For this reason, sportsmen have scorned them."

The bitterness of the hunting-anti-hunting controversy is made keener because it's almost entirely emotional. Anti-hunters, generally, are operating on pure, unbridled emotion. And to a great degree, so are the hunters. As long as both factions are entirely emotional, there is little hope of mutual understanding and tolerance.

It often seems to me that the greatest gap between hunter and anti-hunter exists at the lowest levels of outdoor experience and knowledge. The greater the lack of genuine outdoor mileage and perception, the greater this gap between hunter and anti-hunter.

This basic gap tends to narrow as knowledge and total experience and understanding in nature increase, and the deeply involved hunter and the deeply involved nonhunting naturalist may merge until they are indistinguishable. The image of the "ideal hunter" at the point of the pyramid will vary according to what you feel the ideal hunter should be, but I suspect that it's a balanced blend of hunter, naturalist and conservationist: a man with many polished outdoor skills and abilities, and whose affection and knowledge of nature are matched by his efforts to conserve it. Maybe this is the guy that James Fenimore Cooper called "the ideal man in the state of nature."

Those who aspire to this ideal are deeply offended by both the slob hunter and blind criticism from those who really know nothing about hunting or wildlife. Such criticism is even more biting because it is a puritanical indictment of a life style that we respect and cherish. And when such criticism comes from someone like Cleveland Amory or Lauren Bacall—who wouldn't know the difference between a Cooper's hawk and a Fungo bat—it's especially irritating.

Anti-hunting criticism is with us, and will be from now on. Yet, there are some good things about it. Neither hunters nor their sport are perfect, and criticism forces the genuine hunter to examine himself and his motives—demanding that he understand himself and the resources that support his hunting. It hurts an ethical hunter to be called a barbarian who kills out of sheer bloodlust. But there's an old Korean saying: "Pain makes men think, thought makes men wise, and wisdom makes life endurable."

Out of the soul-searching that we hunters and professional conservationists are being forced to do, something good will come. We are being made to turn our eyes inward, as well as outward. It is no longer enough to say to our critics that we provide ten jillion dollars per annum to support wildlife conservation. We must defend our actions not just on financial grounds, but on ethical ones as well.

In the eyes of many people, our means do not justify our ends. From their point of view, modern game management is analogous to a man buying a horse so that he can beat it to death. He may have paid cash for the horse, but his act is basically cruel and without purpose.

Put it another way: There is more to being a good father than just paying the bills. The good parent gives something of himself to his children—a spiritual and ethical base, a sense of values. Much the same can be said of hunting. It is not enough that we support wildlife conservation; we must also infuse our act of hunting with a special morality. I believe that one of the greatest responsibilities of a conservation department today is not just to manage fish and wildlife populations as well as it can, but to also be an ethical arbiter of how those populations are used by the public. The trouble is, game and fish people have had their hands so full of the first problem that they haven't had enough time to attend to the second.

Just one year ago, I was invited to speak to the student chapter of the Wildlife Society at Kansas State University. I pontificated for about 20 minutes, talking about hunting and anti-hunting to a fine group of 60 students. After that, just for the heck of it, I turned into a devil's advocate. I asked how many of the students were hunters: About 99% of them were. I then demanded that they defend their sport of hunting. For about a half-hour the students presented the usual threadbare defenses of hunting, and I tried to rebut those reasons as Joseph Wood Krutch or Alice Herrington might have. Some of the kids began to think. By the time the session ended, we had all been shaken up a bit. It was the sort of thing that they'll be facing when they get out of school, and they may as well begin now. I wish I'd gotten some of that in college—it would have saved me a lot of time. It might be a good idea for a wildlife school to hold a couple of senior seminars on anti-hunting, airing the pro-and-con philosophies of killing fish and wildlife for pleasure.

Anyway, our stock defenses of hunting aren't acceptable to much of the public. To defend hunting on the basis that managed game populations can afford to be hunted is like condoning burglary of a rich man's home simply because he can afford the

continued

recycled paper

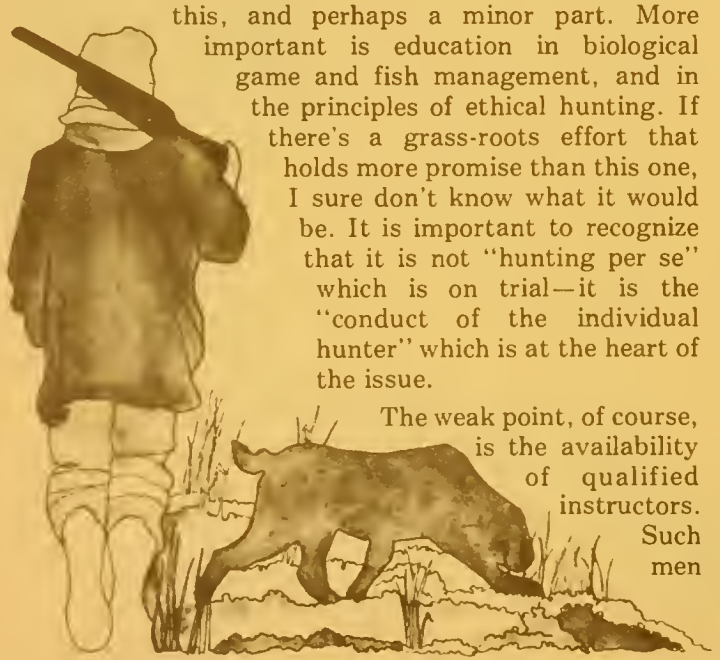
loss. Such a defense of hunting will not satisfy a thoughtful nonhunting public. That public has the right to demand several things of us: that the wildlife population be able to support the hunting pressure exerted on it, that hunting does not affect nonconsumptive uses of wildlife, and that the hunter conducts himself in an ethical manner.

The hunter is no longer free to act without ethical restraint. He is accountable to his sport, to the wildlife that sustains his hunting, and to the nonhunting public. This sense of accountability must be drilled into hunters if the sport is to survive. I sometimes think that whatever the future holds for the hunter, he deserves. He's probably going to get what's coming to him; whether that is good or bad depends largely on him.

In its simplest terms, the sport of hunting must operate on two principles: (1) that the act of hunting does not jeopardize the existence of any wildlife species, and (2) that the act of hunting shames neither hunter nor the animals that he hunts. Professional game managers have been preoccupied with the first principle, and have tended to neglect the second. Yet, if either of these principles is violated, the act of hunting is insupportable. So what can we do to strengthen these principles in the future?

Biological game management—based on good research and good enforcement of such management—is the beginning. This is basic, as is a solid information-education effort. Then comes the big problem of conducting good public programs.

The best answer that I can see is mandatory hunter-safety training, and certification of all new hunters. Actual safety training is only part of this, and perhaps a minor part. More important is education in biological game and fish management, and in the principles of ethical hunting. If there's a grass-roots effort that holds more promise than this one, I sure don't know what it would be. It is important to recognize that it is not "hunting per se" which is on trial—it is the "conduct of the individual hunter" which is at the heart of the issue.



The weak point, of course, is the availability of qualified instructors. Such men must be hunters who know guns and shooting, of course, but they must also be able to convey the essence of wildlife conservation and hunting ethics—and make it stick. It's a very tough job to find and recruit such men, and furnish them with good materials, but it must be done.

To make things even tougher, there may be a critical time element.

A lot of us didn't begin hunting with a ready-made set of ethical guidelines. I sure didn't. Anything that I know about the ethical field behavior, and ethical attitudes toward wildlife, has taken me 35 years to learn.

And we just don't have that kind of time today; we can't leave it to chance, and let our hunters "jes' grow," like Topsy. We've got to give the young hunter a running start—a working knowledge of gun safety and conservation. And above all, we must instill in him a bitter intolerance of slob hunting. The militant anti-hunters won't give us much time to do this—they want the sport of hunting (and our state fish and game departments) to be abolished now.

In the meantime, it's essential that professional wildlifers do a lot of homework on the subject of anti-hunting. Two excellent sources with which to begin are Dr. Clarke's "Autumn Thoughts of a Hunter" in the *Journal of Wildlife Management*, October 1958, and Jose Ortegay Gasset's "Meditations on Hunting," published in 1972 by Charles Scribner's of New York. Doug Clarke is a brilliant wildlifer with a profound grasp of international literature; Gasset was a Spanish sportsman and one of the eminent philosophers of this century. Nowhere have I seen writings by anti-hunters as perceptive as these. The fact of the matter is, there has been far more good stuff written to support hunting than to condemn it. There's good reason for that—the people who write bitterly about hunting simply don't know enough about hunting to do a real job of it.

Unfortunately, that is not as true of television and motion pictures. Disney proved that. It is a simple matter to attack hunting with a motion picture or a TV special, and it can be extremely difficult to produce a TV special that captures the essence of hunting—and even more difficult to sponsor it on prime time. This is the fault of television, not of the hunter. Someone has said that American television is a sword rusting in its scabbard while we're fighting environmental battles. That certainly applies to modern game management and what it has meant to Americans and American wildlife.

•*John Madson has written numerous environmental articles and many books on wildlife, including "Principles of Game Management," "The White-Tailed Deer," "Rainbow Trout in the Great Lakes" and "The Ring-Necked Pheasant." He is director of conservation for the Winchester-Western Conservation Department.*—Ed.

recycled paper

department position statement

F&G photo by Craig Sharpe

Managing the Grizzly

Recently, the nation has become extremely concerned about the future of the grizzly bear, *Ursus arctos horribilis,* the "horrible bear" of the western wilderness. The press has picked up on this, focusing mostly on the Yellowstone National Park situation and the pros and cons of grizzly hunting. Subsequently, many grizzly fans have pressured federal agencies and state game departments to stop hunting. A recent move by the federal government classifying the grizzly as "threatened" under provisions of the Endangered Species Act of 1973 has already led to an interim ban on grizzly hunting, except on a very limited basis in west central Montana, in and around the Bob Marshall Wilderness.

The Department of Fish and Game is pleased at this great

continued

concern for the bear. Unfortunately, however, we feel much of this enthusiasm is directed at a subordinate issue, hunting, while the real issues, such as habitat destruction and encroachment, go almost unpublicized. Even worse, we fear the public will become complacent if all hunting ends —"If hunting is stopped, the grizzly will be saved." Right?

Wrong. Recent criticism this department has received usually follows the same theme—"There's only a few hundred grizzlies left, so soon the species will be extinct south of Canada. Hunting is frequently viewed as the greatest threat to the grizzly, so bear fans demand a moratorium.

Instead, man's relentless encroachment into the grizzly's domain — those few remaining wilderness retreats, the silvertip's last hope — is Grizzly Enemy Number One.

The grizzly requires vast wildlands to survive. Montana is indeed fortunate to have such remote regions and thus, the ability to house grizzlies. If we can somehow manage to keep these areas in their present condition, Montana will have grizzlies for a very long time.

A grizzly in western Montana's Sun River country stands up for a better look at the photographer. F&G photo by Tom Warren

But all is not well in grizzly country.

Today, society searches for — and often finds — a silent place to spend a few days "harmonizing" with nature. Regrettably, our securing of solitude robs the silvertip of his.

Also, our life styles remain tragically wasteful, requiring a constant quest for minerals, energy, timber and other natural resources. The list of pending threats to grizzly habitat resulting from our waste-filled lives looms as a colossal disaster for the bear.

With this in mind, the "preservation means no hunting" theory holds little water. In fact, compared with habitat disruption, the hunting debate lacks significance. Anti-hunters could better serve the grizzly by relaxing their attacks on sportsmen and joining the move to preserve grizzly habitat.

Another point moratorium-seekers often miss is other forms of mortality. During 1967-72, for example, legal hunting accounted for only about half of the total man-caused grizzly mortality in Montana. Bears killed in self-defense for destroying private property or livestock or taken illegally account for the other half.

Few Americans realize there are probably more grizzlies in west central Montana than in the Yellowstone area. This population is, according to department information, stable, at the least, and very likely, increasing. Simply because numbers are few doesn't make the population endangered.

Hunting moratoriums won't stop—and might not even reduce—grizzly mortality. If habitat encroachment continues, bear numbers will steadily decrease — with or without hunting. Idaho, for example, has had a closed season since 1947, but the grizzly population hasn't increased. Instead, it has slowly decreased. Perhaps Idaho never had as many

grizzlies as Montana. And perhaps the habitat was lower quality. But the fact remains that a hunting ban didn't bring the bear population back — or even stabilize it.

As a research and wildlife management agency, this department has carefully collected information on hunting. We adhere to the principles of game management. These principles include the fact that hunting of certain species is valid and necessary. We are, however, totally against illegal and unethical practices of certain pseudo-sportsmen. The ethical hunter is perhaps the grizzly's best friend, having funded and encouraged wildlife research, management and sportsmanlike hunting. But the "slob" who only cares about the rug, regardless of how he comes by it, is no friend of the grizzly — even though he often buys a license and thus contributes to wildlife conservation.

We know it's hard to swallow, but there are some good arguments that a hunting ban would actually be detrimental to the grizzly. Many wildlife authorities acknowledge this. Consider these facts:

•Hunters keep the bear wary of man, thus the grizzly associates humans with danger, not with food. To our knowledge, there has never been a verified incident of a grizzly killing a person in a nonpark area in Montana since a wounded bear killed a Ft. Benton hunter 20 years ago. In the parks—until recently, at any rate—bears fed on garbage. By associating so closely with people, the bears lost some of their wariness. In 1967, garbage-foraging grizzlies killed two young women in Glacier National Park. After the shock waves of this tragedy surged across the nation, letters came in urging the federal government to sterilize the national parks and forests of grizzlies. "Parks are for people," they said, "not for bears."

In 1972, a garbage-seeking grizzly killed another camper, this time in Yellowstone Park. Shortly thereafter, *Montana — the Magazine of the Northern Rockies* ran an article insisting "man must come first" whenever man and grizzly conflict for the same place. Similar deaths and the subsequent "exterminate grizzlies to make the land safe for people" cries haven't occurred in hunted grizzly populations.

•Hunting helps keep bear numbers in balance with the carrying capacity of the available habitat. This, in turn, reduces population stress and competition for food, just like any other game species —with one important difference. Being a potentially dangerous animal, it's better to confine the grizzly to wild areas. A moratorium could force—through population stress—bears from the roadless regions and into civilization's camps. In the resulting bear/man conflicts, the grizzly would always lose.

•And last, very useful biological data on grizzlies in the lower 48 states comes from questionnaires sportsmen complete when they slay a silvertip. This includes date and location of kill, sex, hunting area and other useful data. Also, for the past two years, questionnaires have been sent to all holders of grizzly hunting licenses asking them to indicate sitings, including tracks and other signs.

The department operates under a frequently updated grizzly bear management plan that contains these goals: to

•perpetuate natural grizzly populations where they exist and increase bear numbers where feasible,
•maintain self-sustaining populations by hunting,
•consider sport hunting as a means of replacing other mortality (illegal, nuisance or damage control kills) as a population control and
•investigate the possible re-establishment of grizzly populations in potential habitats.

Also, the department is involved in two major interagency research projects concerning grizzly bears—one in and around Yellowstone Park and the other in northwestern and west central Montana. These studies will hopefully produce the needed facts for future management.

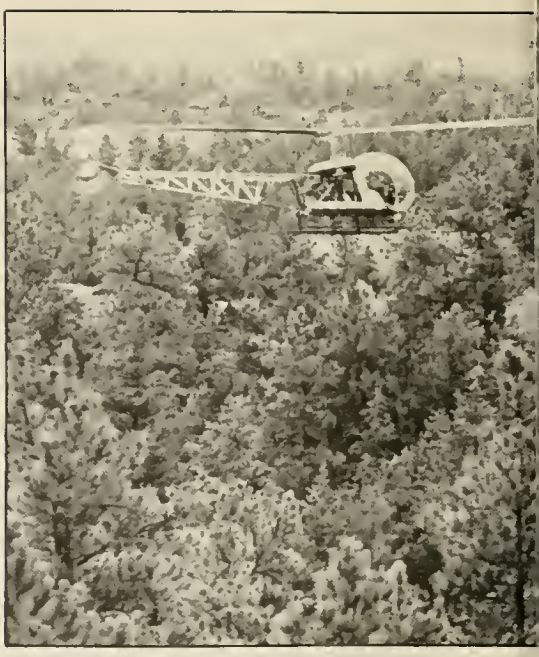
To quickly summarize, we strongly feel legal hunting is not endangering the grizzly, and if there was ever the slightest indication that it was, this department would be the first to propose closing the season. Habitat destruction and encroachment are the most serious threats to the grizzly and the Department of Fish and Game will continue to question, study and sometimes criticize land use activities which directly or indirectly affect remote wildlands—the silvertip's last hope.

1975 HUNTING REGULATIONS

Montana will allow grizzly hunting in 1975 in and around the Bob Marshall Wilderness. (Refer to the department's big game regulations for details.) However, only 25 grizzlies can be removed. This includes *all* man-caused mortality, not merely hunter harvest. For example, bears killed for destroying livestock and private property, in self-defense or illegally count toward the total of 25. In a select situation, the season could close before it opens—*if* the nonhunter deaths tally 25. However, using mortality information from the last few years, we predict that from five to ten grizzlies will be available to hunters. When the total take approaches 25, the season will be closed on a 48-hour notice.

The U.S. Fish and Wildlife Service, the same agency that studied and then listed the grizzly as a "threatened" species under the Endangered Species Act of 1973, endorsed these regulations.

A cow elk tagged during the Missouri Breaks study. F&G photos by Mike Aderhold



Helicopters were used to observe elk during the stud

DEPARTMENT PROJECTS:

ELK IN THE MISSO

The Missouri River Breaks is a superb, unique, picturesque chunk of wildlife real estate in the northeastern corner of the state. It is native wapiti habitat and now supports a herd exceeding 500 animals.

Local interest in this herd is justifiably high. The herd is unique in numerous respects:

- It has one of the highest reproductive rates in the state;
- yearling breeding is the highest yet documented in Montana, over 75%;
- success of archers and gun hunters is higher than anywhere else in the state, and
- it is the only huntable herd in the eastern one-third of Montana.

PAST

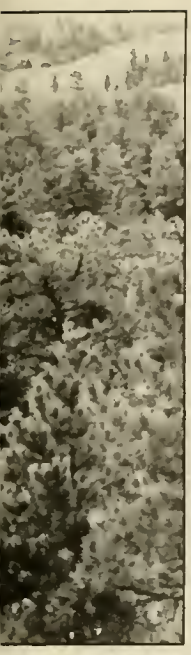
In 1805, Lewis and Clark traveled through the Breaks and saw vast game herds. On May 6, 1805, Meriwether Lewis made these notes at a spot just below the entrance of the Milk River into the mighty Missouri: "Saw a great quantity of game of every species common here. Captain Clark walked on shore and killed two elk, it is now only amusement for Captain Clark and myself to kill as much meat as the party can consume."

Sometime after 1850, elk began to diminish in the Breaks. By the turn of the century, historians and old-timers indicate elk had disappeared completely, probably because of human encroachment upon the native elk habitat combined with overshooting. Elk were absent until they were restocked during the winters of 1950-51 and 1951-52. The restocked elk adjusted rapidly to their habitat and within a few years occupied most of the available habitat on the north side of the Missouri River and Fort Peck Reservoir. (See map.)

By 1957, the herd had reached huntable proportions, primarily the result of their excellent reproductive rate (over 60 calves per 100 adult females). Fall 1957 marked the initiation of gun hunting for elk in the Breaks and archery enthusiasts got their first try in September 1966.

PRESENT

Around 1970, local interest in the Breaks elk herd peaked. Questions came from the Department of Fish and Game and from concerned sportsmen and landowners about (1) fluctuating populations, (2) numbers of permits, (3) emigration of elk and factors responsible, (4) quantity and quality of elk habitat available and amounts needed by elk under various conditions and (5) the interrelationships of elk, deer and livestock in the Breaks. Available information did not answer these questions. To provide the needed data, the department initiated a study in June 1973 to: (1) research the year-round habits and requirements of the Breaks elk, (2) obtain a better



A monarch [8-point] bull elk tranquilized and tagged during the study.

JRI RIVER BREAKS

by Bruce Campbell

understanding of the relationship of the elk to livestock and wildlife in the area, (3) evaluate recreational use (hunting, camping, fishing, sightseeing, etc.) of the area and its relationship to the welfare of elk and (4) devise a management plan for elk to optimize outdoor recreation obtainable from this area.

The study has two parts. The first centers around elk forage requirements, competition with other ungulates and overall range condition. The second includes evaluation of security requirements for elk under varying habitat conditions, during different levels of hunting and nonhunting pressures and at different times of the year. (A secure situation exists if the *size* of a certain piece of habitat used by elk does not vary significantly during nonstress and stress periods.)

A thorough review of available information on elk ecology and range condition was made initially and continues. Numerous range and vegetation transects were evaluated to obtain condition trends. Monitoring of individually identifiable elk provides an understanding of range use patterns — associations of elk with deer and cattle; feeding, resting and travel patterns; both group size and composition (males, females, calves), and size and type of habitat units preferred under various conditions. During 1973, 36 adult elk were fitted with color-coded neck bands; 19 of these also received transmitter packages. These animals are extensively monitored from both ground and air. Habitat components such as topographic features, fences, water sources and vegetative cover are mapped and correlated with range use to provide information on habitat requirements.

Stress factors involving vehicles and livestock were also monitored. Periodic flights over the area yielded information on vehicle type, location and time of observation. Additional information on vehicle use came from recording pneumatic traffic counters placed on key access roads. Hunter interviews provided data on numbers of hunters per vehicle, hunter origin, areas hunted and whether hunting was on foot or by vehicle. For livestock, numbers, turn-in dates (the chronological time when the livestock are allowed to enter or are pushed by the rancher into a given pasture) and pasture shifts were noted. During the periodic aerial surveys of the over 900-square-mile study area, level and composition of the elk population were also studied.

Much of the first segment of the study has been finished. Previous department-sponsored research in the Breaks conducted by Dr. R. J. Mackie of Montana State University adequately outlined year-round elk-deer-livestock food hab-

continued

its. (See the Sept./Oct. 1973 *Montana Outdoors*.) His results indicate that competition between elk and deer occurs and is most significant during the spring and summer period. Elk were more competitive than deer and influenced less by joint use of food supplies. The potential for serious competition for food supplies between elk and cattle existed during early spring, fall and winter. Joint heavy use of several forage species by both elk and cattle often prompted elk to seek out areas where cattle were absent or the prior use of vegetation was light.

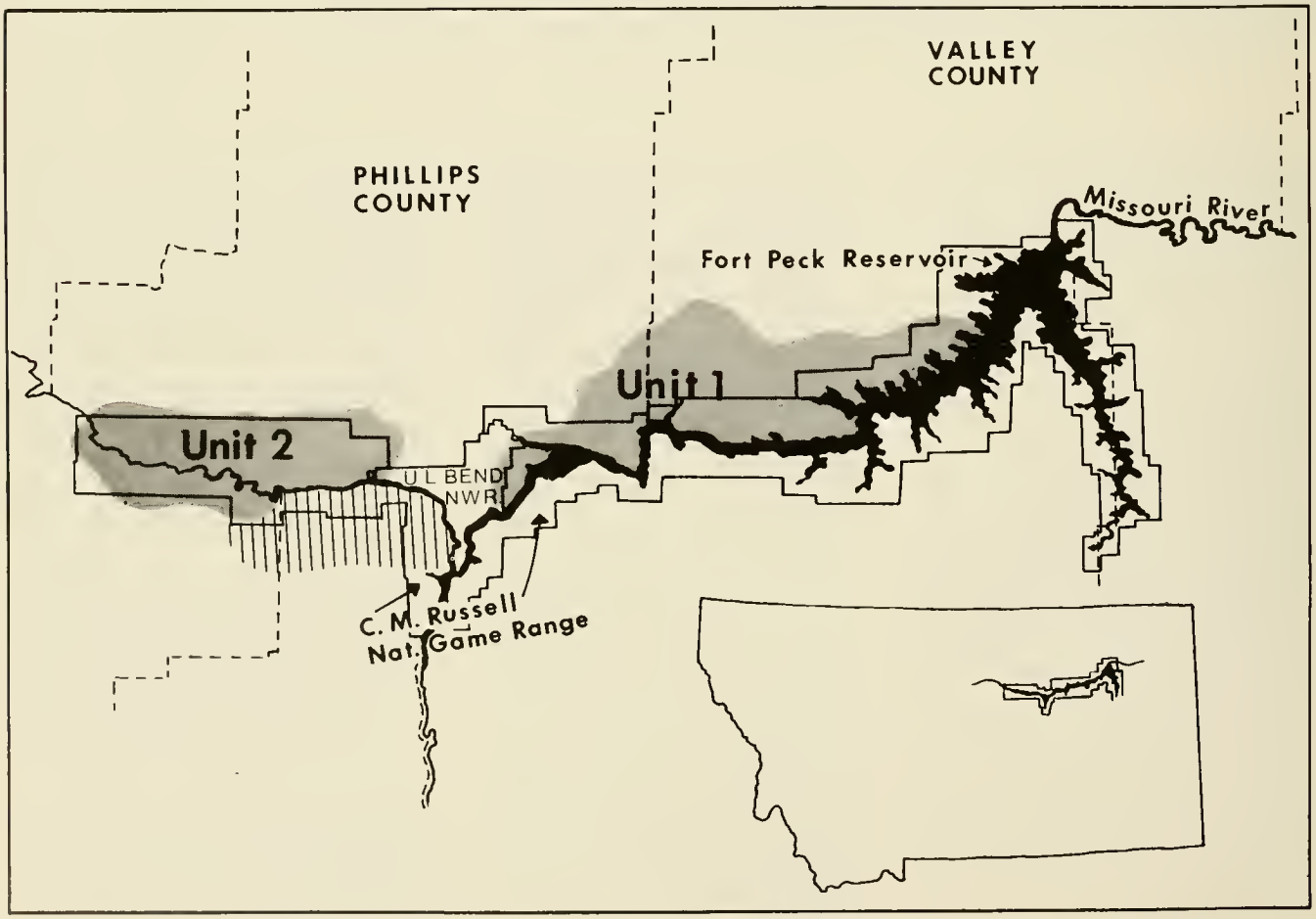
Range and vegetation trend indicators show that most of the elk habitat is in fair to good condition and that the trend is mostly upward. Past and present records of elk reproduction—a yardstick indicator of range condition or forage availability during critical periods—also suggest that the elk: deer: livestock: food supply ratio has not been lopsided.

Some preliminary findings concerning elk-cattle associations indicate elk move out when large numbers of cattle suddenly move into an area. Normally, the elk don't move far before relocating. Habitat conditions at the new site are usually less desirable for the elk than those at the displacement site and requirements may not be adequately met. However, this displacement of elk can be minimized by minor alterations of grazing management practices.

Initial observations point to significant differences in security levels between south Valley (Unit 1) and south Phillips (Unit 2) counties. (See map.) The south Phillips unit provides the greater security level, primarily because of larger, more continuous stands of conifers and more numerous, denser juniper thickets. Other security factors, such as road density and topography, vary less between units.

Cow elk living in the south Valley unit required more space than those in the south Phillips unit. This difference was most prominent during the general deer and elk gun seasons. This difference between units was not identifiable for male elk, perhaps because the sample size was smaller. Areas used by males and females in both units during hunting season were significantly larger than those used during nonhunting periods.

Scattered but reliable reports by ranchers and sportsmen of elk observed many miles from the Breaks during earlier seasons prompted closer examination. Reports received during the 1974 hunting seasons were screened as thoroughly as possible to detect false reports and to prevent duplication of reports for one group of elk. Findings suggested



The shaded area indicates Missouri River Breaks elk habitat covered by this comprehensive study. The region south and southeast of Unit 2 [marked with vertical lines] indicates an area where elk range, but it is not covered by the study.

SOUTH VALLEY AND SOUTH PHILLIPS HUNTING SEASON INFORMATION

Year	Number of permits	Number of applicants	Harvest gun hunters	Harvest archers	Gun Hunter success %
1957	22	1,259	19	no season	86%
1958	35	1,675	23	no season	66%
1959	35	1,548	28	no season	80%
1960	50	1,992	42	no season	84%
1961	80	2,162	58	no season	73%
1962	60	2,102	42	no season	70%
1963	30	1,607	28	no season	93%
1964	90	2,731	59	no season	66%
1965	90	2,866	84	no season	93%
1966	120	2,796	86	12	72%
1967	120	2,417	100	25	83%
1968	240	3,249	156	14	65%
1969	310	3,357	174	6	56%
1970	310	3,750	152	6	49%
1971	275	3,441	173	29	63%
1972	80	2,718	61	10	76%
total	**1,947**	**39,670**	**1,285**	**102**	**66% (average)**

that a segment of the base herd in south Valley may have been lost because of emigration (elk leaving the Breaks). Initial indications suggest these losses are tied to hunter pursuit techniques and lack of secure habitat.

Additional information from range use studies shows that living space requirements for both male and female elk of various age classes is greater in the Breaks than in the more mountainous western half of the state. A comparison with results from range use studies conducted in western Montana and northern Idaho showed that (1) Missouri River Breaks females used 4-5 times more area than their western counterparts and (2) bulls in the Breaks used from 1½-2½ times more area. Human-elk confrontations during all periods of the year and especially during the hunting season cause the elk to increase their living space requirements beyond the 10-20 square miles used during non-stress periods.

Vehicle use surveys showed approximately equal use of both units during nonhunting periods. Travel loads increased in both units during hunting seasons, with the largest increase in the south Valley area. Vehicle travel per road per day peaked during the September elk archery and December gun elk seasons. Most of the archery, gun deer and gun elk hunters covered large segments of the hunting units during each day's hunt. Hunters drove less in the south Phillips unit, possibly reflecting the higher security level and greater difficulty in spotting game in this unit. Increased vehicle travel per road per day increases the possibility for human-elk confrontations, also increasing stress and possibly emigration.

With the cooperation of the Bureau of Land Management, the U. S. Fish and Wildlife Service and area stockmen, research will continue at least through winter of 1975-76. Further information is needed on range use and security requirements in some areas of the Breaks. Additional telemetry equipment was installed and/or replaced during July 1975.

Season regulations for 1975 have been altered to test effects of a shortened overall hunting period on stress levels. A decreased number of permits (55) coupled with bulls-only hunting hopefully will result in population increases. Project personnel will also be able to evaluate effects of the increased hunting pressure on the herd's bulls and lack of pressure on the cows.

Results will allow management personnel to provide for the basic needs of elk. But consideration or fulfillment of the needs of elk is only one facet of a successful management program. The opinions of sportsmen and landowners must also be considered and incorporated into the program. So, project personnel ask concerned persons to come to the Region 6 department office in Glasgow to air their opinions.

FUTURE

What part will elk play in the ecology of the Missouri River Breaks in the year 2000? Will conditions allow an annual hunt or elk hunting at all? Changes in land use, increased human population density, livestock grazing management practices, nonhunting recreational uses and changes in public access all play a critical role. By arming ourselves *now* with the necessary facts concerning elk needs and understanding the desires of sportsmen, landowners and the general public, the well-being of the Missouri River Breaks elk will be assured.

our endangered species

The Wolf

by Dennis Flath

IN the course of history no other carnivore has so profoundly influenced human affairs as the wolf. It has been hated and feared, bountied since the time of the ancient Greeks and generally considered a folklore villain. Even today, "Little Red Riding Hood" and "The Three Little Pigs" are common fare for young readers. And the screens of American movie theaters occasionally display tales of the *loupsgarou*—the "werewolves" of medieval mythology.

In the 17th century when the colonists arrived from Europe, the wolf occurred throughout most of North America. It ranged from central Mexico to the most northerly reaches of the continent. Since that day, predator control measures have exacted a heavy toll of wolves. Wherever men went with their livestock, the wolf was viewed as a scourge. Wolves were dubbed the "Hounds of Hell" or "Sharks of the Plains." Few, if any, attempts were made to understand wolf ecology unless those efforts resulted in more efficient control measures.

In Montana, little attention was given to predator control until 1883. By that year, the vast herds of bison had been replaced by domestic cattle. In the absence of buffalo, the plains wolves turned to beef as a major food source. Stockmen began to note "vast swarms of these pests" and the Territory of Montana subsequently offered a bounty of $1 apiece. Most counties and some stockgrowers associations offered additional bounties. The combination of territorial bounties, county bounties and pelt value was enough to encourage some individuals to become professional "wolfers." For example, one young fellow named Martin earned $118.50 in one week in Yellowstone County. In his book, "The Wolf in North American History," Stanley P. Young refers to some correspondence from Fort Keogh in February 1886 which states: ". . .In Yellowstone County the boys have struck quite a bonanza. In addition to the territorial bounty, the county offers one dollar on a coyote, and two dollars on a wolf. This just doubles the territorial bounty on each animal killed or brought in.

"A young fellow named Martin with not much on his hands except idle time, practiced a week at the business in Yellowstone County, and the result was nine wolf skins and twenty-six coyote skins. To sum up he got $13 and $26 for coyote ears, and $9 and $18 for those of the wolves; after which he sold the hides for an average of about $1.50 each to a fur dealer in Billings."

In 1915, the principle responsibilities for predator control were given to the U.S. Biological Survey. Soon, government hunters were trapping and poisoning wolves throughout the West. As a result, wolves were nearly eliminated from Montana. By the 1930s predator control programs focused primarily on other species, although wolves continued to be taken occasionally.

Today, Montana has only a few wolves. Wolf tracks and sightings have been reported from Lincoln and Flathead counties in northwestern Montana; the Sun River country; southwestern Montana adjacent to Yellowstone National Park and in the Gravelly Range, and in Valley County north of Glasgow. Unfortunately, many of these reports must be considered "rumors" since little evidence is available to confirm them. However, enough evidence is available to indicate that relict populations of wolves do occur in some of the more remote sections of Montana.

To properly understand the role of the wolf in nature, it is necessary to examine some of the details of its life.

RAISING PUPS

Wolves are among the most doting and affectionate parents in the animal kingdom, as noted by Adolph Murie in "Wolves of Mt. McKinley" and by Lois Crisler in "Arctic Wild." Pups are usually born in April or May, depending on the latitude. A normal litter

continued

photo by Jon Cotes

Wherever man went with livestock, the wolf was viewed as a scourge. And few attempts to understand wolf ecology were made unless they related to predator control.

will contain from four to six pups, with litter size highly variable. The young are born helpless and blind, usually in a den in well-drained soils. When the pups are about two weeks old, their eyes open, and gradually they develop play activities among themselves. By six weeks, their diet includes meat.

The method by which wolf pups obtain meat points out the amazing complexity of wolf social behavior. Adult wolves carry meat to the growing pups in their stomachs. The meat is regurgitated at the den for the benefit of the pups and their mother who usually remains behind during a hunt. The promise of a hot meal causes the wolves at the den to greet the returning hunters with a most vigorous display of joy and affection. Sometimes another member of the pack will "baby-sit," allowing the mother to participate in a hunt.

By midsummer the wolf pups are taken from the den and moved to a rendezvous site or home base where they remain for the balance of the summer. Here, the pups learn to hunt by practicing on mice and ground squirrels. The adults continue to bring them meat. By fall the pups are old enough to accompany adult members of the pack on hunting expeditions.

THE WOLF PACK

Perhaps the most fascinating thing about wolves is their tendency to form social bonds. These bonds result in packs containing up to 20 wolves; however, most packs include from 3 to 7. A definite hierarchy or peck order exists in the pack with a dominant male as leader. The status of each member of the pack is well known, and recognized by other members. This social hierarchy is continually reinforced through a series of complex behavioral interactions. Packs are generally considered to be family groups composed of mated pairs and their yearling or two-year old offspring.

Maximum pack size is apparently limited by the kind, abundance and availability of prey species. If large animals such as moose are being hunted, a large pack could be assured of greater hunting success. Furthermore, a moose could satisfy the appetites of more wolves than a deer. If a deer is killed by a large pack, some individuals might go hungry. If prey species are scarce, smaller pack size would allow a given number of wolves to hunt large areas more intensively. Thus, prey scarcity may cause large packs to split up.

Researchers have found that wolf packs have well-defined territories. Seldom are alien wolves allowed to trespass within the boundaries of a pack's territory. When such trespassing occurs, the alien is often attacked, driven out or even killed. This behavior can limit the number of wolves occupying a given area.

Wolf territories may be 40 miles across, but prey density and type of terrain can substantially alter territory size. Most territories are 75-150 square miles. Territories are often smaller in winter when prey species are concentrated on winter ranges.

Wolves do not hesitate to travel long distances on nightly hunts. Travels of 20 miles one way are common, and movements of 100 miles in a single night have been recorded. Such long movements, however, usually occur only in tundra areas.

FOOD HABITS

Before leaving for the nightly hunt, the wolf pack gets together for a "family sing." This occasion is apparently the highlight of a wolf's day since some wolves will come a considerable distance to join in the pack's chorus. The howl is a harmonious mixture of wolf sounds with each animal blending its note with the others.

The result is a splendid wilderness symphony. The howl lasts but a few moments, and then the hunters are off!

Investigations into the habits and behavior of wolves have revealed some startling facts about them. They are not the vicious and wanton killers that popular folklore would have us believe. Wolves kill for food, not for fun.

Wolves are specifically adapted to taking large grazing animals as prey. The pack structure enables them to kill animals much larger than themselves. Even though wolves take significant numbers of smaller prey, such as mice, birds or ground squirrels, the mainstay of their diet consists of big game animals. When big game animals are scarce, or when wolf territories extend onto grazing lands, horses, cattle and domestic sheep may be substituted for moose, elk or deer.

By no means do wolves kill every animal they encounter. Researchers have shown time and time again that wolves "test" many animals for each one they actually kill. (Wolves "test" animals by a preliminary attack. The behavior of the potential prey indicates its vulnerability.) In a study conducted on Isle Royale National Park in Michigan, L. David Mech found that of 160 moose within range of hunting wolves, only 131 were detected by the wolves. Of these, 77 were "tested" and only 6 were actually killed. Similarly, wolves have been known to hunt among large herds of caribou for hours without making a kill, evidently going from group to group looking for a weak or slow animal.

Long chases seldom occur, even though the wolf may travel widely to find its prey. If an animal cannot be overtaken in a few hundred yards, wolves will usually give up the chase and begin looking for easier prey. Wolves can sense the vulnerability of an animal soon after the first encounter. They don't waste much energy chasing healthy animals. The hunting habits of wolves thus have a "culling" effect on big game animals. Exceptions to this pattern are rare.

The studies on the 210-square-mile Isle Royale showed that a large pack of 15 wolves averaged a moose kill every 3 days. It was felt that this level of predation was sufficient to keep moose numbers in check. However, subsequent studies have shown that from 1961-1971 the moose population of Isle Royale increased from 600 to 1,000 moose. In this case, it is apparent that wolves are not regulating moose numbers but simply removing a portion of the available annual surplus.

STATUS OF MONTANA WOLVES

The Northern Rocky Mountain wolf of Montana is one of twenty-three races of timber wolves described for North America. Its position on both state and federal lists of endangered species requires complete legal protection.

To help determine appropriate management measures for the Northern Rocky Mountain wolf, a nine-member team has been appointed by the U.S. Fish and Wildlife Service to prepare a recovery plan for this species. The recovery plan will have the ultimate objective of maintaining a suitably large population of Northern Rocky Mountain wolves. At the same time, it will be necessary to identify areas in Montana where wolves can be maintained without coming into direct conflict with domestic livestock.

Both state and federal legislation providing for conservation of endangered species has been adopted. This indicates people *are* interested in rare animals like the wolf. Now, it's time to carry out the purposes of these laws and begin looking at wolves as an integral part of some ecosystems.

Although information is spotty, we now have enough evidence to say Montana still has relict populations of wolves in some of the most remote sections of the state.

THE YELLOWSTONE ELK CONTROVERSY
—see page 26